# Economic Impacts of Temporary Migration
# Evidence from Eastern Europe

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# Economic Impacts of Temporary Migration: Evidence from Eastern Europe

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# Abstract

This thesis uses individual level data to analyse the potential impacts of temporary migration in Eastern Europe. The empirical analysis looks at: (i) the patterns of selection into migration and return, (ii) the labour market returns to return migration and (iii) the impact of a change in natives' attitudes on the intended duration of stay abroad.

The analysis commences by presenting cross-country evidence on the labour market outcomes of recent return migrants in Eastern Europe (Chapter 2). It addresses both the income premia received by returnees and their occupational choices upon return. The rest of the thesis goes into more details by analysing the wage earning ability and the selection of Romanian migrants and returnees (Chapters 3 and 4). The results suggest that the selection and sorting of migrants by skills is driven by different returns in countries of destination. These findings are consistent with a model of rational choice in migration decisions. They imply that for a source country like Romania relatively high rates of temporary migration might have positive long-run effects on average skills (schooling) and wages. These effects crucially depend on the magnitude and selection of return migration flows. The last part of the thesis (Chapter 5) addresses therefore one widespread consequence of recent East-West migration in the aftermath of economic recession: the anti-immigrant backlash sweeping across major destination countries in Europe. A widely documented crime in Italy provides a quasi-experimental setting to identify the impact of natives' attitudes on the return plans of Romanian migrants. Our results suggest a significant effect of anti-immigrant attitudes on the intended duration of stay in the host country. The impact is more pronounced for low-skilled migrants. This in turn has important consequences for how migration affects the long run convergence between sending and destination countries.

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# List of Acronyms

| | |
|---|---|
| CEE | Central and Eastern Europe |
| EU | European Union |
| EU-LFS | European Union Labour Force Survey |
| EU-SILC | European Union Statistics on Income and Living Conditions |
| ESS | European Social Survey |
| FDI | Foreign Direct Investment |
| GDP | Gross Domestic Product |
| IOM | International Organization for Migration |
| INS | Romanian National Institute of Statistics |
| Istat | Italian National Institute of Statistics |
| LIS-RIHS | Romanian Integrated Household Survey (Luxembourg Income Study) |
| NDS | National Demographic Survey (Romania 2004) |
| OECD | Organisation for Economic Co-operation and Development |
| OVB | Omitted variables bias |
| RCI | Survey on Romanian Community in Italy (2007) |
| SOPEMI | Continuous Reporting System on Migration (OECD) |
| UN | United Nations |

# Acknowledgements

The work presented in this thesis (including all data collation and analysis) was carried out by the author. Parts of chapters 3 and 5 are based on collaborative work, currently under publication or under review. A shorter version of chapter 2 is part of a joint publication (with Reiner Martin, 2012: "Return Migration: The Experience of Eastern Europe", *International Migration* 50: 109–128). The parts included in this thesis are solely the contribution of the author. Chapter 3 is based on joint work with William Ambrosini, Karin Mayr and Giovanni Peri (published as "The Selection of Migrants and Returnees in Romania: Evidence and Long-Run Implications", in *Economics of Transition,* 2015, 23: 753-793). Sections 3.1 and 3.3.3 are solely the contribution of the author who was responsible for the estimations using Romanian data. The other sections are based on collaborative work for which the author contributed both to analysis and writing. The results of the simulation in section 3.5 rely on the model by Mayr and Peri (2009). Chapter 5 is part of joint research with Augustin de Coulon and Max Steinhardt ("Pane e Cioccolata: The Impact of Native Attitudes on Return Migration", in *Review of International Economics*, 2016, 24: 253-281). The author was responsible for the data analysis, the review, the interpretation and the writing.

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# Chapter 1

# Introduction

## 1.1 Background and motivation

Recent economic studies argue that restrictions to international labour migration represent the greatest single class of distortions in the global economy. The estimated welfare gains from a partial elimination of various barriers to labour mobility from poor to rich countries are in the range of up to 150 percent of world GDP (see Clemens 2011 for a survey). Gains of this magnitude by far exceed the expected gains from lifting barriers to trade or capital flows.

Both empirical research (e.g. Prichett 2006) and theoretical models (e.g. Benhabib and Jovanovic 2012) suggest that migration is potentially an important and rather neglected mechanism for reducing world inequality. From this perspective, international migration could become even more relevant given the limited effectiveness of public foreign aid (Easterly 2006) and the failure of private capital flows to equalise differences in factor prices which originate in different human-capital endowments (Lucas 1990).

An extensive literature analyses the effects of migration for receiving countries and for migrants themselves. Yet there is little empirical evidence on the economic impacts of migration on sending countries. Most of the applied research in the economics of migration uses various sources of data and quasi-experimental situations to identify the relation between migration-induced labour supply shifts and wages (see e.g. Card et al 2012, Manacorda et al. 2012, Ottaviano and Peri 2012). However, the corresponding effects for the sending economies have received relatively little attention (the only exceptions are Mishra 2007 for Mexico, Elsner 2013 for Lithuania and Dustmann et al. 2015 for Poland). One reason for this is the lack of appropriate data which could be used to quantify the economic implications of large labour outflows on the countries of origin.

In this context, the considerable migration flows from Central and Eastern Europe (CEE) and the associated changes in migration policy regimes due to the EU-enlargement, provide an opportunity to address these questions in an almost exper-

| Country of origin | 1990 | 2000 | 2010 |
|---|---|---|---|
| Albania | 0.162 | 0.190 | 0.450 |
| Bulgaria | 0.060 | 0.080 | 0.160 |
| Croatia | 0.123 | 0.140 | 0.171 |
| Czech Republic | 0.021 | 0.027 | 0.035 |
| Estonia | 0.028 | 0.054 | 0.126 |
| Hungary | 0.042 | 0.041 | 0.046 |
| Latvia | 0.020 | 0.033 | 0.122 |
| Lithuania | 0.057 | 0.054 | 0.129 |
| Poland | 0.041 | 0.044 | 0.082 |
| Romania | 0.020 | 0.031 | 0.135 |
| Slovakia | 0.065 | 0.069 | 0.095 |
| Slovenia | 0.044 | 0.072 | 0.065 |

Source: own estimation based on data from World Bank 2012 and UN Population Prospects 2010.

Table 1.1: Stock of emigrants as ratio of total population in the home country

imental setting. The emigration rates from CEE grew sharply over the last decade, and particularly with the two waves of EU enlargement (2004 and 2007). As indicated in Table 1.1, for several CEE countries the stock of migrants residing abroad is about 10% or more of the total population. This represents an even larger share of their workforce.

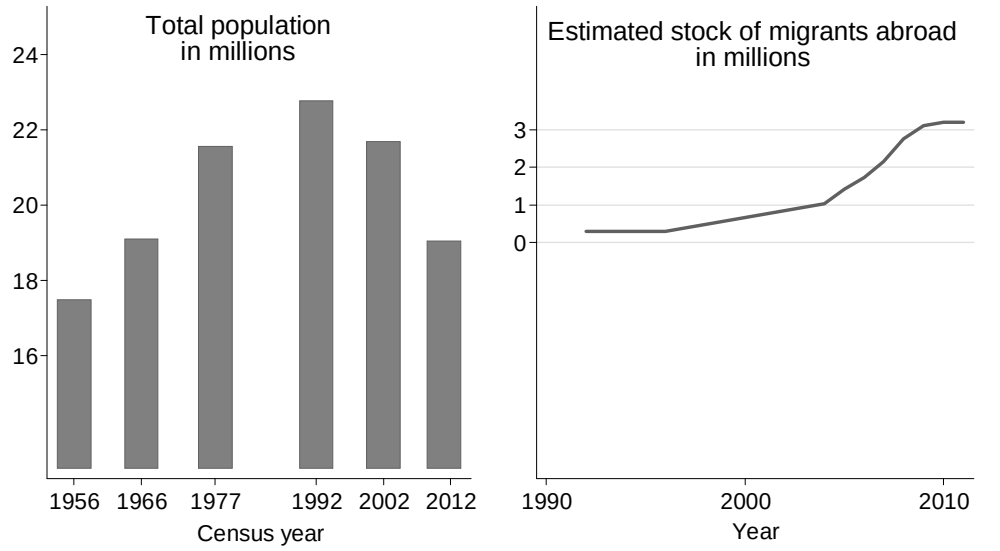
Migration flows of this magnitude, often associated with a positive selection of migrants, have been regarded as harmful for developing countries (Grubel and Scott 1966; Bhagwati 1976; Bhagwati and Hamada 1974; Bhagwati and Rodriguez 1975). However, from the perspective of migrants themselves migration is an opportunity to improve, sometimes dramatically, their standard of living. There is evidence that migrants e.g. from Latin America (Clemens, Montenegro and Pritchett 2008), from India (De Coulon and Wadsworth 2010) or from Eastern Europe (Budnik 2009) earn on average two to three times more at destination than they would at home. Moreover, the migration of highly skilled may induce virtuous educational incentives in the home country population. In the long run, this might increase the overall human capital of the sending country. This possibility of a "brain gain" has been identified theoretically in the past and tested empirically in recent research. Beine et al. (2001, 2008) use a cross-country approach to show that low emigration rates are positively correlated to average schooling levels. Using individual data, Batista et al. (2007) and Chand and Clemens (2008) find a positive incentive effect of skilled emigration on education. A large body of work has also shown that more frequently migration is rather temporary than permanent and return migrants often become successful entrepreneurs or bring back highly productive skills with positive consequences for their countries (Dustmann and Görlach 2015b). The positive impacts of return migration for the countries of origin have been analyzed theoretically i.a. by Dustmann

(1995), Santos and Postel-Vinay (2003), Mayer and Peri (2009), Dustman, Fadlon and Wiess (2010), Dustmann and Glitz (2011), Dustmann and Görlach (2015a,b). There is extensive evidence that return migrants receive income premia for their work experience abroad (Reinhold and Thom 2009; Barret and Goggin 2010, Wahba 2015)). Several recent studies have also emphasized the importance of returnees as a source of entrepreneurship (Constant and Massey 2002; McCormick and Wahba 2001, Wahba 2015).

These aspects of migration and return are particularly relevant for the case of Central and Eastern Europe (CEE). After the opening of the borders in 1990 and subsequently in the context of EU-enlargement, several of its professionals as well as unskilled workers moved to Western Europe and to North America (see e.g. Kahanec and Zimmermann 2009 for a recent overview). Over the last two decades, return migrants also became an important and fast-growing group on the labour markets in all CEE. Precise and comparable figures of the stock of East European migrants who already returned to their countries of origin are still missing (see Chapter 2 for details). However, some recent research suggests that these migrants acquire productive skills while abroad and receive significant income premia upon return (see e.g. Co, Gang and Yun 2000 for female return migrants in Hungary; De Coulon and Piracha 2005 for Albanian returnees; Hazans 2008 for Latvian returnees and Iara 2009, Martin and Radu 2012 for cross-country comparisons). There is also evidence that returnees in CEE have a higher proclivity for entrepreneurial activities or for self-employment than non-migrants (Kilic et al. 2009; Piracha and Vadean 2010), but are at the same time more likely not to participate in the labour market.

Will an increased mobility of Eastern Europeans due to lower mobility barriers result in harmful consequences for their countries of origin? How does migration and return contribute to the productivity and income of workers? What will be the consequences of further reducing the cost of migration? Which factors will be the main determinants of return and re-migration decisions?

The present analysis will address these questions empirically using data on migration from Romania. This is a particularly relevant and representative case study due to the size of the population, the magnitude of emigration, but also the structure and destination of labour outflows and the considerable rate of return migration (see Chapter 2, Table 2.1 for comparative figures). Romania experienced a natural population increase until 1991, mainly due to restrictive emigration and the forced pronatalist policies of the communist regime. The radical change in birth control policies in the mid 1960s had a dramatic impact on fertility rates (see figure 1.2) and on the socioeconomic outcomes of affected birth cohorts (Pop-Eleches 2006). The demographic change during communism and the large migration flows from Romania after 1989 are intrinsically linked. The latest census data (2012) indicate a signifi-




Source: own estimation based on census, INS, Istat, INE and World Bank Data

Figure 1.1: Migration and population change in Romania 1990-2010

cant decline of the total population which, as suggested in Figure 1.1, closely mirrors the sharp increase in the stock of migrants abroad over a relatively short period of time. Both the population decline (from somewhat more that 22 million in 1992 to less that 20 million in 2012) and the total number of migrants residing abroad (estimated at around 3 million in 2011) correspond to about 10 per cent of the total population. At the same time, the estimated share of return migrants in the total population of Romania is also around 10 per cent. As summarised in Table 2.1 this level corresponds to an average rate of return migration among CEE countries.

This striking similarity of the three measures[1] (10 per cent population decline, 10 per cent emigration rate, 10 per cent share of returnees in the total population of Romania) and their potential socio-economic consequences provided the motivation for the present research. The use of individual level data for the empirical analysis was instigated primarily by the need to understand what lies beneath those intriguing aggregate level figures.

[1]For reasons of population-accounting principles, the measurement of migration from census data is notoriously imprecise and the impact of migration on population decline is not straightforward. In theory, non-permanent migrants currently residing abroad should be at least partially captured in the census as absentees. Even in the presence of a huge miscount, migration can affect but not fully explain the population decline.

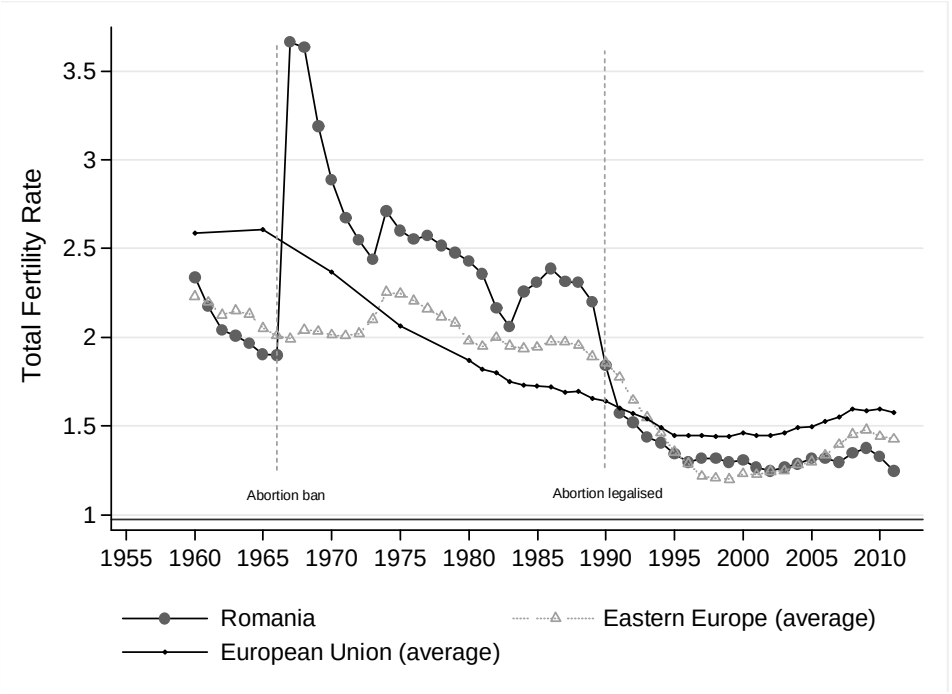



Figure 1.2: Fertility rates in Romania and Europe (Source: UN statistics, own representation)

## 1.2 Research questions

The consequences of migration and return on the sending countries will depend crucially on two aspects: the size and the selection of these flows. The larger the number of migrants and returnees the larger are the potentials for gains and losses. Moreover, for the countries of origin, a positive selection of migrants and returnees, in terms of their skills, may represent both a challenge (risk of brain drain) and an opportunity (incentives to invest in education as well as a potential increase of the human capital stock due to skills acquired abroad by return migrants).

The aim of this thesis is therefore to address three main sets of questions.

i. Who are the migrants? Economic theory (Roy model) predicts that migrants will not represent a random subsample of the population but a self-selected group. The practical implication is that people with specific skills and abilities self-select into the pool of migrants (and of returnees) and sort themselves across specific countries of destination. We will therefore ask if these decisions were rational in the case of CEE migrants, i.e. if they were consistent with the predictions of the human capital (Roy 1951) model of migration (Dahl 2002). How do migrants and returnees compare to non-migrants in the home country and to each other? Are migrants and returnees positively or negatively selected with regard to their observed characteristics and unobservable skills?

ii. Do the rationality of migration and the positive selection of returnees allow us to evaluate the aggregate (skill and wage) effects of migration from Eastern Europe? More specifically, to what extent can return migration contribute to alleviate the negative supply shock of emigration in the sending countries? What are the economic returns to return migration? Do migrants improve their labour market performance upon return due to skills acquired abroad? Do labour market outcomes of students returning after studying abroad differ from those of returning migrant workers? Do returnees receive significant income premia for their work experience abroad? Are they more likely than non-migrants to switch into self-employment or to become entrepreneurs? How do the saving and remitting choices while abroad affect the prospects of returnees to climb up the occupational ladder? Does the exposure to work abroad increase the propensity of migrants not to participate in the labour market after returning?

iii. What factors affect the duration of stay abroad. In particular, do changes in natives' attitudes towards immigrants affect the plans of foreign born to return to their countries of origin? There is little evidence in the current literature to answer this question. This is puzzling considering the economic importance of return migration and the impact of return intentions on the integration of immigrants in their host society. Return intentions are positively correlated with return realisations and are driven by the same determinants (Dustmann 2003). However, none of the models of return migration (e.g. Borjas and Bratsberg 1996, Yang 2006, Dustmann et al. 2011) incorporates the role of natives' attitudes in the out-migration decisions of foreign born. There is to date no empirical study on the effects of natives' attitudes on the flows of return migration. We use the case of Romanian migrants in Italy to illustrate how a strong negative shock in attitudes of Italians towards a specific group of foreigners impacts on their plans to return to their home country or to settle at destination.

## 1.3 Methods and data sources

The contribution of the present analysis consists in addressing these questions using individual level data from sending countries in CEE. To this end, we combine census and large survey data which allow us to identify migrants and returnees.

The main challenge of our empirical analysis is the potential endogeneity of migration decisions in models of labour market outcomes for returnees. Correcting for this requires credible instruments which are not easily available in standard surveys not designed to analyse migration. Most censuses and surveys hardly collect any information about return migrants and do not allow accurate distinctions between return and other forms of temporary migration. Precisely such distinctions are in-

dispensable for any analysis of the behaviour of return migrants.

For the case of Romania, we match therefore information from census data to data from the National Demographic Survey (NDS). The NDS data were collected by the Centre for Regional and Urban Sociology (CURS) and were designed to be representative both at national and regional level. Our restricted sample has more than 37,000 observations, including about 1,500 returnees (who had spells of employment abroad). It covers all relevant individual characteristics and information on migration choices and on remittances received from household members abroad. More information on sample characteristics and the construction of variables is provided in chapters 3 and 4. To justify our selection of destination countries, we used administrative registers covering information for more than 100,000 migrants who left Romania betweem 1995 and 2001. We could access individual level information on their age, gender, education, occupation, region of origin in Romania and countries of destination. Mode details on the data and a description of the cross-tabulations are included in Appendix A. The data are used in Chapter 3 (Figure 3.1).

The main data source for the cross-country analysis in Chapter 2 is the EU Labour Force Survey (EU-LFS), which is based on harmonised national surveys. Despite differences in sample sizes and collection methods, the cross country comparability of data from EU-LFS is considered to be higher that of any other employment data set in Europe (for more details on methodology see Eurostat 2004). Two features of the EU-LFS make it a particularly valuable source of information on return migrants. First, it contains information on the country of residence one year before the survey was conducted. It is thus possible to identify recent return migrants in the EU-LFS using this information together with the information on the country of birth. Rendall el al. (2003) show that although underestimating the aggregated level, this way of using the EU-LFS data provides estimates of returning EU citizens which are more reliable than those for migrants. We pool repeated cross-sections from the EU-LFS over the period 2002-2007. Using the retrospective information on countries of residence, we are able to identify an unweighted initial sample of more than 2,500 returnees observed in the first year upon arrival across seven CEE countries. We use data from the fourths and fifth rounds of the European Social Survey (ESS) for descriptive statistics. The data were collected 2007-2010 and the samples were designed to be representative for each country. We identify return migrants as those persons born in the country, who have been working abroad for at least 6 months over the last 10 years - and are observed back home at the time of the survey. However, the sample sizes per country are rather small and therefore the data are less suitable for a more complex analysis.

The analysis of the return decisions is based on a survey of Romanian migrants in Italy. The survey was commissioned by the Strategy Unit of the Romanian Govern-

ment and was carried out 2007 on a country-wide representative sample of Romanian migrants using a sampling frame confirmed by Istat. The survey contains detailed information on migration strategies, previous migration behaviour, employment status in Italy, attitudes towards the Italian society, ties with the region of origin in Romania as well as a detailed set of questions on further migration plans, i.e. concrete plans to return to Romania in the near future, plans to settle in Italy o a permanent basis or to migrate to third countries.To these data we match regional indicators extracted from Istat (regional GDP, unemployment rate, share of registered foreigners in the population and share of Roumanian migrants among foreign born at the regional level).

| Country | Date set | Year(s) | Main variables used in the analysis | Chapter |
|---|---|---|---|---|
| **Romania** | Population Census | 1992, 2002, 2012 | Employment and population frequencies from the IPUMS subsamples | 3, 4, 5 |
| | National Migration Census | 2001 | Prevalence rate of migration and return (collected for 12,000 local communities) | 4 |
| | National Demographic Survey (NDS) | 2003 | Individual monthly wages, non-migrants and returnees (work and/or study abroad) | 3, 4 |
| | Administrative Emigration Registers | 1995-2001 | Cross-tabulations (flows) on migrants by education and destination countries | 3, 4 |
| | Returnees Survey | 2005 | Labour market outcomes (wage, participation ocuupation) before migration and upon return | 4 |
| **US** | Census | 2002 | Employment, population, and average monthly wages of Romanian migrants | 3 |
| **Austria** | Census | 2002 | Employment and population frequencies for Romanian migrants | 3 |
| | EU-SILC | 2004 | Average monthly wages of Romanian migrants | 3 |
| **Spain** | Census | 2003 | Employment and population frequencies for Romanian migrants | 3 |
| | EU-SILC | 2004 | Average monthly wages of Romanian migrants | 3 |
| **Italy** | Romanian Community Survey, Italy | 2007 | Return intentions of Romanian Migrants residing in Italy | 5 |
| **CEE** | EU-Labour Force Survey (EU-LFS) | 2001-2007 | Return migrants identified using retrospective information on countries of origin | 2 |
| **CEE** | European Social Survey | 2002-2008 | Return migration identified as persons who worked abroad for a period of at least 6 month. | 2 |

Table 1.2: Data sources and main variables used in the thesis

## 1.4 Structure of the thesis

The analysis consists of four parts. The next chapter provides cross-country evidence on patterns of return migration in Eastern Europe. It focuses on the labour market behaviour of returnees: their occupational status and the income premia they receive upon return. This cross-country perspective emphasizes the importance of return migration for the CEE labour markets. It also suggests the potentially significant roles of network effects and social interactions on the one side, and of self-selection mechanisms of migration on the other side, in mediating the impact of migration and return in the regions of origin. These two aspects provide the underlying rationale for the subsequent chapters.

In Chapter 3 we develop various measures with which to analyse the selection of Romanian migrants and returnees as well as their sorting across countries of destination. This part of the analysis provides a picture of the relative size and relative compositional characteristics (including wages) of migration flows from Romania over the period 1995-2005. It covers non-migrants, returnees and migrants to three types of destination countries, i.e. which attract either positively, neutrally or negatively (self-)selected migrants. The characteristics of these destination countries with regard to their labour market types and ranges of institutions determined the selection of migrants not only from Romania but for other CEE countries as well.

Complementing the findings on selection into migration and return, Chapter 4 looks specifically at the income premia for migration experience and at the occupational choices of returnees in Romania. Do Romanian returnees receive significant income premia both from self-employment and from dependent employment? Are these income affected by correction for the endogeneity of migration and labour market participation choices? Do remittances and savings transferred from abroad have the same impact on occupational choices upon return? Does the work experience abroad increase the propensity of return migrants to participate in the labour market?

Chapter 5 looks at the determinants of return migration for the case of Romanian migrants. It uses a quasi-experimental setting to identify the impact of native attitudes on the settlement intentions of Romanian migrants.

We derive some conclusions from the main results of the thesis in chapter 6. We also indicate some possible directions for future economic research on the key issues of migration in Eastern Europe that remain to be resolved.

# Chapter 2

# Return migration: cross-country evidence for Eastern Europe

This chapter provides a cross-country comparative perspective on the main features of return migration in CEE and presents some evidence of its likely economic impacts. It does this in three steps. First, we construct aggregate indicators to assess the overall magnitude of return migration (flows and stocks) in selected CEE countries. Second, we review the available evidence with a focus on the labour market situation of return migrants in CEE. Third, we use a regression analysis based on data from EU-LFS to characterise the labour market performance of recent returnees.

## 2.1 Stocks of migrants and returnees

Two types of data can be used to obtain some first intuition on the magnitude of migration and return for the case of Eastern Europe. First, population censuses permit the estimation of aggregate stocks of migrants and returnees. Second, survey data which allow the identification of return migrants can be used to assess the significance of return migration for the countries of origin.

Prima facie evidence on the stock of return migrants can be obtained from representative surveys which include retrospective information on residence and labour market status. We can use data from the fourths and the fifth rounds of the European Social Survey (ESS) to compare the share of return migrants in the total population of CEE countries. The results summarised in Table 2.1 suggest that in most CEE countries considered for the period around 2010 on average about 10 per cent of the active population (aged 20-60) had spend at least six months working abroad over the previous decade and subsequently returned[1]. This represents a considerable share on the labour market and is significantly higher for the male active population.

[1]One can estimate similar ratios of returnees for West European countries included in the ESS. The figures are in general lower than for CEE countries but have a larger variation, ranging from around 2 per cent in Switzerland to about 4 per cent in the UK, 5 percent in Ireland and Cyprus and 6 per cent in Sweden.

| | Ratio of return migrants among | | |
|---|---|---|---|
| | All | Female | Male |
| Bulgaria | 0.086 | 0.067 | 0.106 |
| Czech Republic | 0.064 | 0.047 | 0.080 |
| Estonia | 0.133 | 0.067 | 0.214 |
| Hungary | 0.075 | 0.048 | 0.104 |
| Latvia | 0.092 | 0.063 | 0.132 |
| Poland | 0.121 | 0.077 | 0.163 |
| Romania | 0.072 | 0.053 | 0.091 |
| Slovakia | 0.107 | 0.066 | 0.167 |
| Slovenia | 0.030 | 0.015 | 0.045 |

*Notes:* Own estimation using data from ESS 4th and 5th rounds: 2008-2010. Returnees were identified as persons born in the country who spent at least 6 months working abroad over the last 10 years and subsequently retuned. Weights were applied for all subgroups (age and gender).

Table 2.1: Rate of return migration in the active population (aged 24-60)

In Poland, Latvia and Slovakia around 12 per cent of the active age men had work experience abroad.(Estonia is an outlier most likely due to ethnic return migration). The lower ratio of returnees among women is likely to be the results of fewer women returning (i.e. migrating on a short-term basis). The data on migration flows do not allow a proper gender breakdown, but the stock of migrant women from most of the CEE countries residing abroad is similar to that of men for any given year over the last decade (see e.g. Brücker et al. 2013).

Precise aggregate level statistics on the stock of migrants who already returned to their countries of origin in CEE are still missing. However, recent evidence from other regions suggests that 20 per cent to 50 per cent of immigrants return within five years after migration to their home countries (OECD 2008)[2]. Extrapolating this to the case of recent East-West migration means that even the most conservative projections would yield a lower-bound estimate of more than half a million returning migrants for the period 2004-2009 only.

We can try to assess the plausibility of these figures using data from population censuses (or current population surveys). For years around 2000 such data have been organized by Docquier and Marfouk (2006) into widely used data set. For a selected group of receiving OECD countries, the United Nations (2009) has also collected long time series on yearly gross inflows of migrants by country of origin. Although these data are fraught with various methodological problems, they provide a first intuition on the magnitude of migration and return from Eastern Europe. We consider the years 1990 - 2010 for selected CEE countries that can be identified consistently. Table 1.1 already showed the stock of emigrants from each of these countries, as percentage

[2]OECD (2008) states that a relatively small income gap between the home and the host country increases the likelihood of return. This could be increasingly relevant for East-West migration.

| Source Country | Return Flows (imputed) | Gross Flows | $\frac{\text{Return}}{\text{Gross}}$ |
|---|---|---|---|
| Albania | 20,476 | 34,207 | 0.60 |
| Bulgaria | 24,353 | 42,109 | 0.58 |
| Czechoslovakia | 24,230 | 18,697 | 1.30 |
| Estonia | 5,859 | 12,099 | 0.48 |
| Hungary | 54,450 | 40,535 | 1.34 |
| Lithuania | 2,824 | 12,010 | 0.24 |
| Latvia | 3,053 | 97,135 | 0.31 |
| Poland | 282,984 | 306,842 | 0.92 |
| Romania | 54,197 | 132,312 | 0.41 |

Source: Based on Ambrosini et al. (2011) using data from UN (2009) and Docquier and Marfouk (2006).

Table 2.2: Imputed return migration (from OECD destinations)

of their domestic population for the year 1990, 2000 and 2010. For some of these countries, it is also possible to impute the return migrants as share of the gross flows. We use the data on stocks from Docquier and Marfouk (2006) to obtain (by difference) the net immigration country by country between 1990 and 2000. From the United Nation (2009) data on yearly gross flows from the same countries of origin to the same destinations we obtain the cumulative gross flows of migrants. The difference between gross flows (from country $i$ to $j$) and the net changes of people from country $i$ living in country $j$ constitutes a measure of re-migration:

$$\text{Return flow}_i^j = \text{Gross Flows}_i^j - \Delta\text{Migrant Stock}_i^j$$

Following Borjas and Bratsberg (1996), Dustmann and Weiss (2007) and OECD (2008), we make the assumption that most of these re-migrants are returnees and we count this difference as the measure of imputed return flows[3]. Table 2.2 summarises these results by aggregating gross and imputed return flows by source and host country respectively.

We do the same for destination countries. We calculate the difference between the gross migration flow from all CEE counties of origin to each destination country $d$ and the respective change in the stock of migrants from CEE countries residing in the destination country $d$:

$$\text{Return flow}_s^d = \text{Gross Flows}_s^d - \Delta\text{Migrant Stock}_s^d$$

We aggregate these differences by selected countries of destination ($d$). The results are presented in table 2.3 for the major destination countries of East European

[3]We make the assumption that all those who are not anymore included in the statistics return to their countries of origin. This is not always the case, e.g. for onward migrants.

| Host Country | Period | Return flows (imputed) | Gross flows | $\frac{\text{Return}}{\text{Gross}}$ |
|---|---|---|---|---|
| Australia | 1990 - 2000 | 85,940 | 79,255 | 1.084 |
| | 2000 - 2010 | 11,619 | 59,522 | 0.195 |
| Austria | 1990 - 2000 | 116,725 | 270,609 | 0.431 |
| | 2000 - 2010 | 353,632 | 446,600 | 0.792 |
| Belgium | 1990 - 2000 | 16,692 | 27,615 | 0.604 |
| | 2000 - 2010 | 9,989 | 70,935 | 0.141 |
| Canada | 1990 - 2000 | 125,346 | 157,928 | 0.794 |
| | 2000 - 2010 | 24,066 | 122,230 | 0.197 |
| Denmark | 1990 - 2000 | 84,060 | 99,594 | 0.844 |
| | 2000 - 2010 | 27,100 | 58,111 | 0.466 |
| Finland | 1990 - 2000 | 18,148 | 25,429 | 0.714 |
| | 2000 - 2010 | 30,027 | 33,711 | 0.891 |
| Greece | 2000 - 2010 | 457,893 | 783,927 | 0.584 |
| Italy | 1990 - 2000 | 147,522 | 618,917 | 0.238 |
| | 2000 - 2010 | 488,323 | 1,616,519 | 0.302 |
| Norway | 1990 - 2000 | 33,921 | 60,913 | 0.557 |
| | 2000 - 2010 | 112,605 | 123,657 | 0.909 |
| Sweden | 2000 - 2010 | 70,496 | 113,742 | 0.620 |
| Switzerland | 1990 - 2000 | 32,753 | 68,698 | 0.477 |
| | 2000 - 2010 | 84,394 | 99,832 | 0.845 |
| Portugal | 2000 - 2010 | 60,408 | 66,469 | 0.909 |
| UK | 1990 - 2000 | 340,053 | 472,000 | 0.720 |
| | 2000 - 2010 | 713,164 | 1,264,000 | 0.564 |
| US | 1990 - 2000 | 929,366 | 1,220,528 | 0.761 |

Notes: Own estimations using UN data on bilateral migration flows (2010 revision) and World Bank (2011) data on bilateral estimated of migration stocks.
The Central and East European source countries considered are: Albania, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia.

Table 2.3: Imputed return migration flows to CEE

migrants. We can also compare changes in the estimated retention rates of migrants from CEE across the main receiving countries for the periods $1990-2000$ and $2000-2010$.

Table 2.2 is a helpful complementary statistic to understand how relevant return migration is in a period with large gross migration from Eastern Europe. It confirms the conclusion obtained from survey data, that for all countries considered the imputed return migration is a substantial share of total gross migration flows. The ratio of returnees to gross migrants can be larger than 1 since not only migrants who arrived in this decade but also earlier migrants returned during this period. Table 2.2 shows that Czechoslovakia, Hungary and Poland experienced return migration close or even larger than their gross emigration flows. This is an expected finding since

these countries have a longer history of migration before 1989 and might experience now a "retirement migration" of migrants who left around 1968. However, all other East European countries have return rates between 0.3 and 0.6, very similar to the OECD (2008) conclusion.

These aggregate figures have to be interpreted with caution. They may be biased if, for instance, undocumented migrants are better counted in census data than in the official entry statistics, or if the definition of immigrants (by nationality, place of birth or country of last residence) is not consistent between census and administrative data. Despite such measurement problems we can certainly conclude that return migration is not a marginal phenomenon for CEE countries. To grasp the likely impact of this migration on the home labour markets it is important to understand the rationality of migrants and returnees. The motivation for return may be extremely diverse ranging from the completion of a studies abroad or the termination of fixed term temporary contracts to improved opportunities at home.

## 2.2 Available evidence on the impact of return migration in CEE

Many empirical studies in the field of migration suffer from a lack of comparable and reliable data. This is a particularly acute problem when analysing the labour market performance of return migrants in the CEE countries. Most previous research in this field[4] is therefore based on (country-specific) survey data and more often that not the sample of return migrants covered is very small. In this section, we first give a brief overview of papers which explicitly addressed the income effects of return migration in Eastern Europe. Additionally, we also discuss recent results related to other aspects of return migration in the region.

Among the first papers to analyse the impact of migration on earnings upon return is Co et al. (2000). They examine the labour market performance of Hungarian return migrants using data from the 1994 Hungarian Household Panel Survey[5]. They find no wage premium for men who worked abroad whereas women who have previously worked in OECD countries earn a considerable premium over the wage of comparable "stayers". The authors argue that this gender-specific result may be due to higher returns to skills acquired abroad for women returning to specific sectors (e.g. financial services).

In their study of Albanian returnees, De Coulon and Piracha (2005) use a sample

[4]There is a vast and growing literature on the impact of return migration to other countries. We confine our review to studies explicitly addressing recent return migration to CEE countries.

[5]Out of 3145 individuals covered in this survey 167 were identified as having worked abroad (Co et al., 2000, p. 59).

of just under 600 individuals (around 200 return migrants and around 400 "stayers"). They find return migrants to be negatively self-selected and explain this by costs of migration which are directly proportional with the level of skills. Nevertheless, the predicted hourly wage of return migrants increases due to their period of work abroad. In addition, they find that a large proportion of the return migrants become self-employed after their return to Albania.

Hazans (2008) uses a sample of over 10,000 persons in Latvia of which around 500 have worked abroad during the last three years before the survey. After controlling for individual characteristics as well as for unobservable heterogeneity, he finds that return migrants earn an average income premium of about 15%. He proposes three complementary arguments, besides the human capital hypothesis, to explain this income premium. First, he argues that due to their savings from working abroad migrants can search longer for better jobs upon return. Second, he suggests that they are more confident and therefore aim at higher positions on the occupational ladder. Third, he argues that returnees value wages relatively higher than non-migrants (Hazans 2008, p. 25).

The only cross-country study looking at the impact of temporary migration in Europe on the labour market performance of CEE return migrants is Iara (2008). She uses a subsample of young males from the Central and Eastern Youth Eurobarometer (2003) and finds that Western European work experience results in a wage premium for temporary migrants upon return. This is interpreted as evidence for skill transfers taking place during the stay in the host country. Iara (2008) also finds that a higher educational attainment significantly enhances the wage premium.

To sum up, the few studies on return migration to the CEE countries summarized in this section as well as in table 2.4 show a relatively homogenous picture. Return migrants and their households tend to benefit economically from temporary migration and most studies find a significant income premium for work experience abroad. It is however important to keep in mind that the comparability of the results is very problematic due to differences in the country-specific samples and in the estimation methods. In addition, some studies use very small sub-samples of returnees at different points in time and hence at different stages of the transition process in the CEE countries.

Table 2.4 shows a simplified overview of the discussed papers. All studies tried to control for the endogeneity of return migration when estimating wage functions and to identify thus a causal effect of work abroad on wages. Most estimations included only comparisons between return migrants and non-migrants and estimated average income premia from work experience abroad (the income differential 1 in Table 2.4) ranging between 5% and 34%. Some studies estimate also the difference in expected earnings for return migrants before migration versus upon return (income differential

2 in Table 2.4) as being mostly around 25%.

Table 2.4 also reports the corresponding signs of the correlation between the residuals of the wage equation and the return migration equation estimated in each study. These vary across countries and time, but the reasons mentioned above - particularly with regard to the stage of transition at which the return migrants included in the studies initially moved and subsequently came back- make this variation plausible.

A number of recent studies looked more generally at the economic behaviour of return migrants and its implications for the country of origin. Rather than focusing solely on earnings, these papers address the occupational choices of returnees, their entrepreneurial decisions, their saving and remitting behaviour, the acquisition of skills and qualifications while abroad and the transfer of knowledge upon return (see Williams and Balaz 2005 and 2008 for more details).

| *Study* | *Country / Year(s)* | *N* | *Inc. diff. (1)* | | | *Inc. diff. (2)* | *Selection obs. / unobs.* | *Correct self-sel.* |
|---|---|---|---|---|---|---|---|---|
| | | | Overall | Men | Women | | | |
| Co, Gang, Yun (2000) | *Hungary 1993/94* | 112 | | 7 | 34* | | + / - | yes |
| de Coulon, Piracha (2005) | Albania 1998/99 | 204 | | | | 25* | - / - | yes |
| Ambrosini et al. (2015) | Romania 2004 | 635 | 18* | 20* | 17* | | + / - | yes |
| Iara (2008) | CEECs 2003 | 93 | 30* | | | | | yes |
| Hazans (2008) | Latvia 2006/07 | 469 | 15* | 20* | 6* | | + / - | yes |

*Notes:*
N = size of the sub-sample of returnees included in the estimation of income functions
(1): income differential between return migrants (treated group) and non-migrants (control group)
(2): differential between expected earnings for return migrants before migration versus upon return.

Table 2.4: Available studies on income effects of return migration in CEECs

Lianos and Pseiridis (2009) use a sample of 6,120 returnees from six countries in Eastern Europe and Asia. They analyse the individual factors determining the acquisition of additional qualifications and occupational skills while abroad. As expected, human capital investments made abroad are endogenous determinants of the income level, both while abroad and upon return. Returnees who spent a longer period abroad, who learnt the language of their host country as well as those who are better educated or who acquired on-the-job skills while being abroad earn higher incomes upon return to their home countries. The acquisition of skills and qualifications in the host countries is more likely for lower skilled migrants and for those who are employed in the same sectors before and after migration.

For the case of Moldova, Pinger (2010) shows that return migration is beneficial for economic development in the home country not only due to the repatriation of skills but also because of higher financial transfers from temporary migrants compared to permanent migrants. Prospective returnees remit higher amounts and transfer more savings than permanent migrants even if they earn lower wages in the host country.

Kilic et al. (2009) show that exposure to work abroad makes Albanian return migrants more likely to own non-farm businesses compared to non-migrants. However, their results indicate that the propensity of returnees to become business owners depends on the host countries they are returning from: it is higher for destination countries with higher earning potentials and might also reflect differences in the types of skills accumulated abroad. Another relevant finding is that for recent returnees entrepreneurial decisions are not affected by work abroad. Two intuitive explanations are provided for this. First, a negative self-selection process might have affected more recent returnees compared to earlier migrants. Second, recent returnees might be more likely not to settle permanently in Albania, but migrate again in order "to complete their migration cycles". Using the same Albanian data, Piracha and Vadean (2009) also find return migrants more likely to be either self-employed or non-participants in the labour market than comparable non-migrants. They differentiate among returnees who opt for non-participation, dependent employment, own account work and entrepreneurship. Those opting for entrepreneurship seem to be positively selected with regard to educational attainment, language skills acquired abroad, saving behaviour before return and access to better infrastructure. With time spent in the home country after return, non-participants and own account workers appear to search better jobs and re-integrate in the labour market. Piracha and Vadean (2009) further argue that the impact of return migration on the home country hinges not only on the form of employment chosen by returnees but also on the types of temporary migration. In a different study, Vadean and Piracha (2009) look specifically at the determinants of return and circular/repeat migration. According to their results, both return and circular migration accentuate the negative selection of the

initial migration flows from Albania, circular migrants possessing even less skills than permanent returnees.

Complementary to this empirical research, the theoretical model developed by Mayr and Peri (2009) is the first one to incorporate optimal return decisions when analysing the impact of migration on the sending countries. Their model setup is tailored to the case of Eastern Europe. They use the available evidence of income premia for returnees to simulate the impact of return migration on the long-run human capital formation and on wages in the CEE sending countries. The model may also accommodate the rather scattered evidence on the selectivity patterns of East European returnees. The key insights are first, that migration creates incentives for human capital investments and second, that income premia for work experience abroad create incentives to return and crucially influence the selectivity of returnees. Even under a selective migration policy regime, these two mechanisms (human capital investments and selective return) will more than offset the negative effects of "brain drain".

Closely related to the quantitative literature discussed above are also some rather qualitative studies which examine the impact of return migration in selected CEE countries. Balaz et al. (2004) and Williams and Balaz (2005) look at return migration to Slovakia from the UK. They find that the initial migration decision of returnees is motivated not only by economic considerations but by a variety of goals including educational objectives, investments in occupational or more general skills. Return migrants appear to acquire considerable human capital even during relatively short stays abroad – both in terms of formal qualifications and skills. Their propensity to save is high although the total volume of savings is rather limited given the short duration of stay for the migrants included in the study. Williams and Balaz (2008) analyse the learning process and the knowledge transfer through return migration for Slovak medical doctors. Drawing on in-depth interviews with returnees, they reveal the complexity of knowledge transfers to the country of origin and, consistent with other studies, find that "international mobility continues to be a source of significant and distinctive learning". Klagge et al. (2007) use both quantitative (Census) data and qualitative evidence to look at the ways in which highly skilled return migrants contribute to economic development in Poland. They develop a model to analyse the interaction between returnees' individual characteristics and the characteristics of the regions migrants are returning to. They highlight the importance of the institutional and socio-economic context in the region of origin for the successful re-integration of return migrants. Overall, they also support the view that return migration has the potential to contribute to knowledge-based regional development, but this depends on local conditions and institutions.

## 2.3 Comparative analysis based on EU-LFS data

### 2.3.1 Data and identification of returnees

For the purpose of this comparative analysis, we pool cross-sections of individuals observed in the ten CEE countries which recently joined the EU. To ensure comparability over time and across countries we included only observations for the years 2001-2007. The definition we use for return migrants is that they have to be born in their current country of residence but resided abroad the year before the survey. We can differentiate among the countries of residence and can also control for the citizenship of the respondents.

We restrict our sample to persons between age 20 and 60. Overall, this restricted EU-LFS sample includes 2,429 return migrants. We excluded observation from Bulgaria, Estonia, Latvia, Slovakia and Slovenia, for which less than 150 returnees are observable in the data. Besides the descriptive statistics, the models were estimated using observations from five CEE countries: Czech Republic (498 observed returnees for 2002-2007), Hungary (160 observed returnees for 2002-2007), Lithuania (729 observed returnees for 2001-2007), Poland (369 observed returnees for 2004-2007) and Romania (477 observed returnees for 2005-2007).

Apart from the retrospective information on the country of residence, the EU-LFS data set includes individual level variables on main demographic characteristics (age, gender, marital status, the respondent's level of education and his labour market status and main job (occupational and employment status, working time, sector). Similar information on the labour market status is also available for the year before the survey was conducted. The available household level characteristics include the household size, number of children and the number of employed persons in the household.

The individual income variable measures the net monthly pay from the main job in deciles. The corresponding lower and upper boundaries from the income distribution are provided for each country and year. The location (region) of the place of work is included at NUTS 2 level.

There are some important aspects that need to be highlighted regarding the use of EU-LFS data for analysing return migration. The most important one is that returnees can be identified only during the first year upon their arrival from abroad. It is therefore not possible to analyse the re-assimilation patterns of returnees over a longer time span. Since the probability to be included in the LFS in the first year after return might be lower than afterwards, it is very likely that our sub-sample of recent returnees underestimates the actual magnitude of return flows. We therefore avoid any projections on the aggregated level based on this data. However, given the relatively large sample size and the random selection, the data are highly suitable

for an analysis of selectivity patterns and the performance of return migrants in the first year upon return.[6]

### 2.3.2 Descriptive statistics: who are the (recent) returnees?

Some first evidence on the group level differences between non-migrants and returnees is presented in Table 2.5. For all comparisons, it is important to bear in mind that these results apply only to return migrants observed in the first year after returning.

As expected, return migrants are on average more than 7 years younger than non-migrants. This difference is higher than what similar studies find, the reason being precisely that we observe the returnees at the moment of their return. We also matched our data to a cross sectional draw from the 2005 EU-LFS[7] and compared returnees with migrants residing less than 5 years abroad. The comparison confirms that returnees are younger than both the group of migrants they are selected from and the population in the countries they are returning to. For the Czech Republic, Hungary, Poland and Romania, we illustrate the age distribution of the three groups in Figure 2.1. The dotted curves are the age distribution in the non-migrant population of each country. There is only some weak evidence of bimodality in the age distribution of returnees for Hungary and the Czech Republic. This might also be due to the limitations in our data and the fact that we observe returnees arriving in their source countries only at the moment of their arrival and for a given time period around 2002-2007.

Consistent with previous studies (e.g. Hazans 2008), returnees are more likely to be men, significantly less likely to be married and more likely to live in single-person households at the moment of their return when compared to non-migrants. Figure 2.2 shows also the distribution of completed years of education for non-migrants and returnees. Returnees have on average more years of education since, similarly with findings of e.g. Hazans 2008 and Iara 2008, a larger proportion of them attained medium and higher educational levels compared to non-migrants

Immediately after their return, however, migrants are almost three times more likely not to participate on the labour market than non-migrants. Around 20% of the returnees were not active in the first year upon arrival. This non-participation rate is very similar to recent findings on return migrants in other East European countries (see e.g. Piracha and Vadean 2009 on Albanian returnees and Hazans 2008 on Latvian returnees).

Most previous studies find a higher propensity to become entrepreneurs or to switch into self-employment among return migrants than among non-migrants. Sur-

[6] See Rendall et.al (2003) and Marti and Rodenas (2007) for more details on the advantages and shortcomings of using EU-LFS data for research questions related to international migration.

[7] Hamori (2009) uses these data to analyse the employment patterns of CEE migrants in the EU.

| Variable | All sample (1) | Non-migrants (2) | Returnees (3) | t-test diff. (2)-(3) |
|---|---|---|---|---|
| Age | 38.343 | 38.51 | 31.153 | 7.356*** |
| | (0.035) | (0.035) | (0.214) | (0.235) |
| Gender (M=1) | 0.539 | 0.538 | 0.577 | -.038*** |
| | (0.001) | (0.001) | (0.01) | (0.01) |
| Marital status | 0.618 | 0.623 | 0.399 | .224*** |
| | (0.001) | (0.001) | (0.01) | (0.01) |
| Education | | | | |
| *Low* | 0.153 | 0.154 | 0.105 | .048*** |
| | (0.001) | (0.001) | (0.006) | (0.007) |
| *Medium* | 0.674 | 0.673 | 0.707 | -.033*** |
| | (0.001) | (0.001) | (0.009) | (0.009) |
| *High* | 0.172 | 0.171 | 0.186 | -.015*** |
| | (0.001) | (0.001) | (0.008) | (0.007) |
| Unemployed | 0.051 | 0.049 | 0.122 | -.072*** |
| | (0.001) | (0.001) | (0.006) | (0.004) |
| Self-employed | 0.135 | 0.135 | 0.126 | 0.008 |
| | (0.001) | (0.001) | (0.006) | (0.007) |
| Income | | | | |
| *Low* | 0.336 | 0.338 | 0.167 | .170*** |
| | (0.002) | (0.002) | (0.018) | (0.023) |
| *Medium* | 0.403 | 0.406 | 0.208 | .197*** |
| | (0.002) | (0.002) | (0.019) | (0.024) |
| *High* | 0.259 | 0.254 | 0.623 | -.368*** |
| | (0.002) | (0.002) | (0.023) | (0.021) |
| Sector | | | | |
| Agriculture | 0.086 | 0.086 | 0.085 | 0.001 |
| | (0.001) | (0.001) | (0.005) | (0.005) |
| *Industry* | 0.316 | 0.315 | 0.352 | -.036*** |
| | (0.001) | (0.001) | (0.009) | (0.009) |
| *Services* | 0.436 | 0.438 | 0.36 | .078*** |
| | (0.001) | (0.001) | (0.009) | (0.010) |
| Part time work | 0.061 | 0.061 | 0.045 | .016*** |
| (if active) | (0.001) | (0.001) | (0.004) | (0.004) |

Standard errors in parentheses. *** differences in means are significant at 1%.

Own estimation, data from EU-LFS ad-hoc module (2002-2007).

Table 2.5: Descriptive statistics on recent returnees

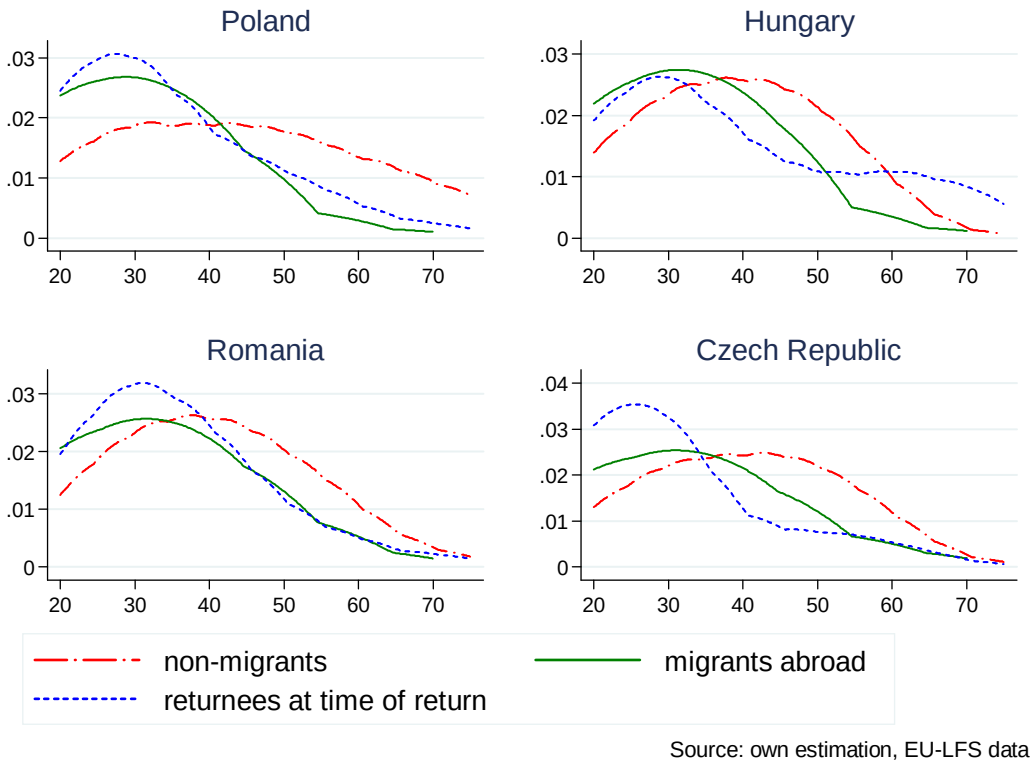



Figure 2.1: Age distribution of migrants, non-migrants and returnees

prisingly, our data suggest that – without controlling for other characteristics – there are no significant differences in the average rate of self-employment between non-migrants and recent returnees in the first year upon arrival.

The average rate of unemployment for returnees is about three times higher than in the total population. This average value neither take into account the sorting of returnees across regions nor the role of individual characteristics as determinants of unemployment.

Even during their first year back home, returnees are much more likely to be at the higher end of the income distribution than non-migrants. More than 60% of return migrants are in the last three deciles of the income distribution of the total population. One plausible explanation for these higher incomes (even compared with results from previous studies) is the self-selection of return migrants into better jobs. We only observe wages for returnees in the first year after arrival and not for migrants who returned earlier or those who didn't find jobs matching their skills in the first year upon return. Returnees who are already employed immediately after arrival are likely to have arranged their positions while being abroad (or even before migrating) and are thus able to make better use of the skills acquired abroad. Additionally, returnees are less likely than non-migrants to be employed in part-time jobs.

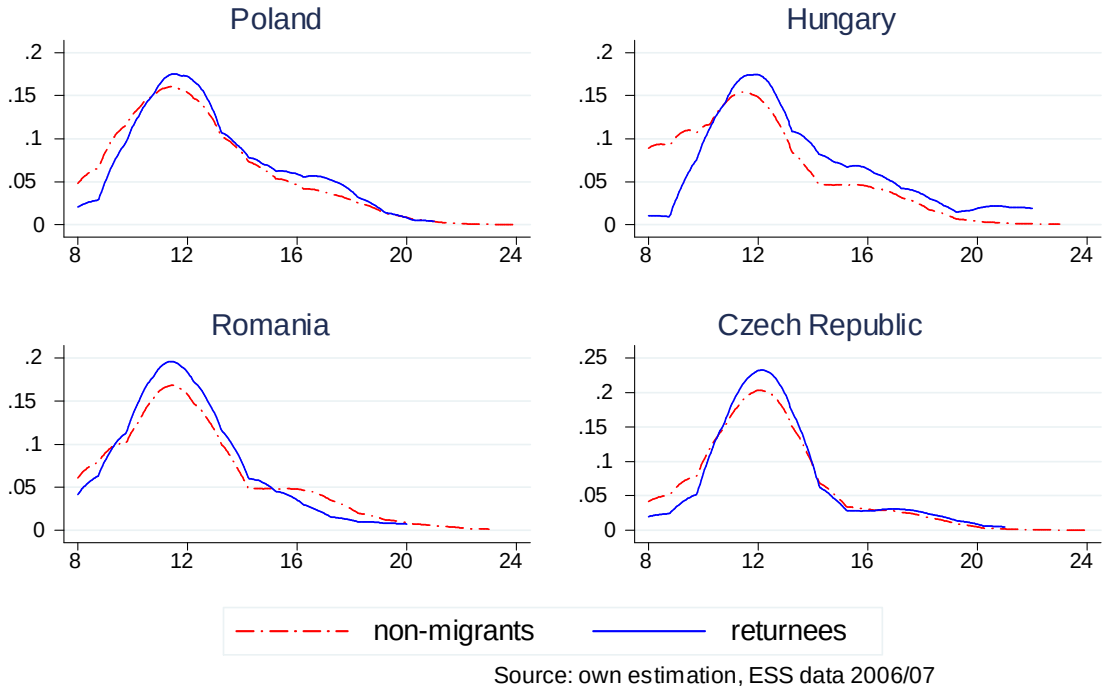



Figure 2.2: Compeleted years of education: non-migrants and returnees

The sectorial distribution of employment is rather similar for returnees and non-migrants. While both groups are equally likely to be employed in agriculture, return migrants are more likely than non-migrants to find employment in the industrial sector rather than in services.

Around 50% of the migrants we observe in the data were returning from three host countries: the UK (18%), Germany (16%) and Italy (12%). These are followed by Spain (9%) and Ireland (8%). This distribution of destinations varies, however, across countries of origin and appears to be changing over time. Before 2004, the main host country of returnees was Germany (19%) followed by the UK (10%) and then by Austria, Spain and Italy (all around 5%). After 2004, the UK became the main host country (almost 20%) followed by Germany (13%), Italy (11%), Ireland (10%) and Spain (9%). Polish migrants were almost equally likely to return from the UK (26%) and from Germany (23%), followed by Ireland, Italy, France and the Netherlands (all around 7%). In Romania, more than 40% of the returnees were from Italy, 25% from Spain, around 5% from Germany and 3% from Greece. Overall, the distribution of host countries for returnees mimics the composition of recent migration flows. The changes over time in the sorting across host countries of migrants who eventually return also correspond to recent migration policy changes. The UK granted immediately free access to its labour market for the countries joining the EU in 2004 while Italy and Spain had various bilateral agreements and regularisation

programmes which made them attractive for Romanian migrants[8].

We consider further two types of effects induced by return migration. The first one is related to income. Basically, the question here is whether migrants' position is higher on the income distribution upon return than that of similar workers who did not move for work abroad and subsequently returned. The second effect refers to occupational choices, particularly the decision to switch into self-employment. Do return migrants have a higher propensity to be self-employed than non-migrants and if so, how can this be explained.[9]

### 2.3.3 Income effects

The income variable in the EU-LFS data provides information about the individual's position in the income distribution (income decile). Additionally, the upper and lower bounds of these deciles are available in the corresponding cross-sections of the EU-LFS after 2002.

We take into account the endogeneity of return migration in two alternative ways: (i) using only the income deciles as categorical indicators and (ii) using also the actual values of the boundaries of the income deciles. For the latter, we reconstruct the income distribution with an interval regression technique and use the predicted income in a treatment effects model. For the former, we allow for endogenous return migration in a bivariate ordered probability model. This can be derived from a latent model with two variables determined by:

$$y_i^* = \alpha_i' X_i + \delta m_i + \varepsilon_{inc} \tag{2.1}$$

$$m_i^* = \zeta_i Z_i + \varepsilon_{mig} \tag{2.2}$$

In (1) $y_i^*$ is the unobserved (continuous) income and $\alpha_i$ a vector of unknown parameters corresponding to human capital characteristics which determine the individual income of $i$. The categorical income (decile) is observed such that:

$$y_i = \begin{cases} 1 & \text{if } y_i^* \leq b_1 \\ 2 & \text{if } b_1 < y_i^* \leq b_2 \\ \vdots & \\ 10 & \text{if } b_9 < y_i^* \end{cases}, \tag{2.3}$$

where the cut-offs $b_i$ are boundaries of the corresponding income deciles.

[8] See Elrick and Ciobanu (2009) on the mediated impact of bilateral agreements on recent migration between Romania ans Spain.

[9] See e.g. Hazans (2008), Wahba and Zenou (2008) and Tunali (1986, 1996) for a more general discussion.

The error terms are normally distributed and the two decisions are allowed to be correlated: $corr\left(\varepsilon_{inc},\, \varepsilon_{mig}\right) = \rho_{inc} \neq 0$

The return decision follows a latent index[10] $m_i^*$ and we observe returnees if: and we observe returnees if:

$$m_i = \left(\zeta_i Z_i + \varepsilon_{mig} > 0\right) = \begin{cases} 1 & \text{for returnees, i.e.: } \; m_i^* > 0 \\ 0 & \text{for non-migrants, i.e.: } \; m_i^* \leq 0 \end{cases}, \tag{2.4}$$

where $\zeta$ is a parameter vector corresponding to those individual characteristics $Z_i$ which affect the utility derived by individual $i$ from working abroad and subsequently returning. We estimated this model as bivariate ordered probit (maximum likelihood method).They only available variables which we can use to identify the model are household characteristics and regional variables which do not affect wages upon return. We use the marital status and the household composition since these variables affect participation but not the level of wages (if observed). For Poland and Romania we can also use the lagged flows of return migrants at county level cumulated at county level over five years before the time at which our data were collected. Since migrants return mostly to their regions of origin, these lagged migration flows are good predictors of subsequent return migration and unlikely to be correlated to the wages of returnees.

We can also use the corresponding bounds of the income deciles to estimate interval regressions with a dummy variable indicating the migration status. The coefficient of this dummy variable is biased since individuals do not randomly self-select into return. In order to correct this bias we estimated two step treatment regressions using the same exclusion restrictions as before.

Some prima facie evidence on the pecuniary returns to work experience abroad can be obtained from ordered univariate probability models estimated using income deciles from EU-LFS. In all specifications these ordered models yield coefficients of returnee dummies which are positive and highly significant (at the 1% level) for all countries. Holding all other relevant characteristics constant, returnees are in a higher income decile than comparable non-migrants.

If return migration is endogenous to the probability of being in a higher income decile, these coefficients are biased. As discussed above, we correct this bias by estimating the joint probability distribution of the ordered income variable (deciles) and of return migration[11]. In order to identify the model we use marital status, the household composition and the lagged migration flows at county level as predictors in the migration equation but not in the wage equation.

[10] i.e. the underlying unobserved propensity to migrate and subsequently return to the home country.

[11] See Sajaia (2008) for details on the Stata routine applied.

Keeping these limitations in mind, our results confirm that the income and the return migration equations (estimated for each country using a bivariate ordered model) are negatively correlated ($\rho < 0$) for the two Baltic countries and positively correlated ($\rho > 0$) for the other countries.

Table 2.6 reports the results of 2SLS regressions in which we use the information on the boundaries of income deciles available in the EU-LFS - which enables us to run an interval regression[12]. As before, the only variables we can use as exclusion restrictions are the two household characteristics (martial status and composition) and the lagged migration flows at county level. Consistent with the estimates based on income deciles only, the coefficients of the returnee dummies are significant and positive for all countries. The dependent variable in the models reported in table 2.6 is the log of the observed wage for non-migrants and returnees. The magnitude of the coefficients of migration status imply that returnees earn on average a wage premia of about 10 to 30 per cent.

[12]We used deflated log wages at the level of 2002.

| | Poland | | Hungary | | Lithuania | | Romania | |
|---|---|---|---|---|---|---|---|---|
| | Wage Eq. | Mig. eq. | Wage Eq. | Mig. eq. | Wage Eq. | Mig. eq. | Wage Eq. | Mig. eq. |
| Male | 0.221* | 0.251* | 0.125* | -0.183 | 0.207* | 0.181* | 0.165* | 0.222* |
| | (0.001) | (0.078) | (0.001) | (0.223) | (0.000) | (0.046) | (0.005) | (0.129) |
| Medium educ. | 0.229* | | 0.174* | | 0.216* | | 0.197* | |
| | (0.001) | | (0.001) | | (0.001) | | (0.007) | |
| High educ. | 0.642* | | 0.537* | | 0.587* | | 0.588* | |
| | (0.001) | | (0.002) | | (0.001) | | (0.001) | |
| Self-empl. | 0.031* | | 0.015* | | 0.013* | | 0.021* | |
| | (0.001) | | (0.002) | | (0.001) | | (0.007) | |
| **Returnee** | **0.113*** | | **0.311*** | | **0.463*** | | **0.127*** | |
| | (0.013) | | (0.047) | | (0.014) | | (0.004) | |
| rho | 0.135 | | 0.322 | | -0.070 | | 0.425 | |
| N | 33178 | | 10405 | | 11587 | | 13048 | |

Robust standard errors in parentheses;.* significant at 1%
Controls for age, occupations, sectors and years included in the wage equation.
Marital status, household size and lagged regional migration flows included in the migration equation.
Own estimation, data from EU-LFS extraction (2002-2007).

Table 2.6: Two step treatment effects: wages and return migration

The signs for both the coefficients and the correlation of the wage and return equations are similar with those in the estimation based on income deciles only: $\rho > 0$ for Poland, Hungary and Romania, whereas $\rho < 0$ for Lithuania. In the context of the Roy-model of self-selection, this is an indicator that in Lithuania returnees' expected wages are lowered by their unobservable characteristics. If return migrants had decided not to move their earnings would have been lower than that of a randomly selected non-migrant. The corrected wage premium for work experience abroad is above 40 per cent, higher than most other results from the literature. This can be explained by the fact than recent returnees might have much better unobservable characteristics than migrants who returned previously. However, our data do not allow more insights into the factors explaining this selection.

For the other countries, return migrants are positively selected in terms of unobservables. Since the dependent variable is log wages the coefficients of the migration dummy in the wage equation mean that returnees obtain wage premia between 10 and 40 per cent. This is in line with the range of estimates in the previous literature and could maybe provide an indication of the lower and upper bounds of the true effect of work experience abroad on performance upon return.

### 2.3.4 Occupational choices

A second possible effect of return migration on the labour market performance of returnees concerns their choice between non-participation, self-employment or dependent employment. In order to analyse this effect we first estimate a multinomial model of occupational choices in which we consider return migration as a purely exogenous decision. We introduce then the residuals from a separately estimated migration equation into the same multinomial model. Since these are significant only for the self-employment decision, we estimate a recursive bivariate choice model in order to account for the simultaneity of the two decisions: i.e. to be self-employed and to be a return migrant.

The estimated model assumes that the decision to become self-employed is following a latent index function which includes return migration as an endogenous dummy variable ($m_i$) along with other characteristics ($X_i$) which influence the individual's utility from self-employment:

$$s_i^* = \beta_i' X_i + \gamma m_i + \varepsilon_{self} \tag{2.5}$$

with the rule for observing the actual decision given by:

$$s_i = (\beta_i' X_i + \gamma m_i + \varepsilon_{self} > 0) = \begin{cases} 1 & \text{for self-employed, i.e.: } s_i^* \geq 0 \\ 0 & \text{for non-self-employed, i.e.: } s_i^* < 0 \end{cases}, \tag{2.6}$$

Return migration is observed like in (4). There are thus four possible outcomes of this decision process[13]: (i) the individual decides to migrate, return and be self-employed upon return (i.e.$s_i = 1, m_i = 1$), (ii) the individual decides not to migrate but to be self-employed (i.e.$s_i = 1, m_i = 0$), (iii) the individual decides to migrate but not to be self-employed upon return (i.e.$s_i = 0, m_i = 1$), and (iv) the individual decides not to migrate and also not to be self-employed (i.e. $s_i = 0, m_i = 0$).We treat the two decisions $s_i$ and $m_i$ as endogenous with $E[\varepsilon_{self}] = E[\varepsilon_{mig}] = 0$ and correlated with coefficient $corr(\varepsilon_{self}, \varepsilon_{mig}) = \rho_{self} \neq 0$.

We need to highlight two aspects related to these choices: one is the so called "parking lot" hypothesis, the other is unemployment. For the latter, we estimate additional probit models on the determinants of unemployment but the results do not change. However, using the EU-LFS data we could not identify credible instruments to adjust for the unobserved heterogeneity of return migrants. In the context of return migration, the "parking lot" hypothesis (based on Harris-Todaro types of models) suggests that returnees might spend only a limited time upon their return in small scale entrepreneurial activities or (informal) self-employment before finding a way to enter formal employment (Piracha and Vadean 2010). However, this hypothesis cannot be tested using the EU-LFS data because we observe returnees at only one point in time.

To obtain the effects of return migration on occupational choices we estimate multinomial logit models assuming first that return migration is exogenous for the choice over non-participation, self-employment, and dependent employment. The results show that after controlling for all relevant individual characteristics return migrants are more likely not to participate in the labour market or to be self-employed rather than employees. We included only a dummy for being a return migrant without controlling for the migration decision. Most other variables have the expected effect: men are more likely than women to participate in the labour market and more likely to be self-employed rather than employees; persons with higher educational attainment are more likely to participate in the labour market but less likely to be self-employed.

As already mentioned above, if non-migrants and returnees are different in unobserved variables, $\varepsilon$, as well as in the variables we observe, $x$, and if $\varepsilon$ affects also the occupational choices upon return, the differences in occupations between migrants and returnees cannot be attributed to the work experience abroad. The differences in $x$ between non-migrants and returnees that cause overt bias can be removed with the multinomial models. One way to deal with the hidden bias due to differences in $\varepsilon$, is to use an extra regressor in the occupational choice equation. This extra regressor is called "selection-correction term" and is a function of covariates with some exclusion restrictions: some of its components are excluded from the response (occupational

[13]These are not necessarily either-or choices, but our data allows only exclusionary identification.

choice) equation. In our case, these exclusion restrictions are not strictly necessary since we use non linear models. But without them we cannot separate the selection bias from the non-linear components of the regression function. This procedure is called "control function". Using this set-up., we test for the endogeneity of migration for occupational choices by including the residuals of the migration equation (from 2.4) in the multinomial model.[14] We exclude the lagged rates of returnees at regional (county) level from the occupational choices. As in Wahba and Zenou (2008), we argue that these past migration rates do not plausibly affect individual level occupation choices - which depend on individual migration experiences and labour market conditions. The residuals from 2.4 are significant only for the self-employment decision. For the self-employment decision, we account for the endogeneity of migration by estimating a bivariate probit model with the same specification. This model allows the two decisions (return migration and self-employment) to be correlated. The self-employment equation is identified by the information on the work status of other household members and by excluding the lag of the return migration rate at county level from the migration equation. Keeping the caveats of the identification strategy in mind, we find that after controlling for endogeneity in this way returnees are less likely to switch into self-employment than non-migrants. This result is stable across countries and to an alternative specification using the same exclusion restrictions but modeling the two decisions as linear probability models.

This result is in line with the findings of Wahba and Zenou (2008) on Egyptian returnees. They develop a theoretical search model to accommodate the effect of return migration on entrepreneurial decisions. Their main argument is that temporary work abroad is an opportunity to accumulate human and physical capital but may lead to a loss of social capital back home which makes it more difficult to become self-employed.

Table 2.7 reports for each country the results of two specifications of multinomial logit models estimated on the determinants of unemployment, inactivity and employment: (1) without, and (2) including regional dummies. The higher unemployment rate among returnees is not fully explained by their individual characteristics. However, after controlling for the regions of residence, the returnee dummy turns negative or insignificant. Migrants are thus sorted across regions where they are not able to find employment in the first year after arrival. The clustering of returnees into specific regions, even though these are experiencing high unemployment rates, can be due to specific network ties within the home communities. It also endorses the hypothesis of non- pecuniary returns to work experience abroad. Our EU-LFS variables do not allow the identification of credible instruments to adjust these results for the unobserved heterogeneity of returnees.

[14]The generalized probit residuals were calculated following Gourieroux et al. (1987).

The results indicate that, other things being equal, higher educated returnees are less likely to be unemployed. Older recent returnees, who might have gained more labour market experience, are also less likely to be unemployed in the first year upon arrival. The same holds for married compared to single migrants and for female returnees compared to men who returned from abroad.

| | *Poland* | | *Hungary* | | *Czech Republic* | | *Romania* | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| Returnee | .083*** | -0.001 | .018 | .022 | .013*** | .001 | .005** | .001 |
| | (.002) | (.002) | (.015) | (.016) | (.003) | (.007) | (.002) | (.001) |
| Men | -.005*** | -.003** | -.006*** | -.002* | -.007*** | -.007*** | -.002*** | -.002*** |
| | (.001) | (.001) | (.001) | (.001) | (.001) | (.001) | (.000) | (.000) |
| Age | .001*** | .001*** | .001*** | .003*** | .001*** | .001*** | 0.001 | -.001*** |
| | (.000) | (.000) | (.000) | (.000) | (.000) | (.000) | (.004) | (.000) |
| Medium education | -.021*** | -.007*** | -.018*** | .018*** | -.017*** | -001*** | -.003*** | .001*** |
| | (.003) | (.002) | (.002) | (.002) | (.002) | (.000) | (.000) | (.000) |
| High education | -.017*** | .014*** | -.020*** | .037*** | -.012*** | -.002*** | -0.002 | .003** |
| | (.001) | (.004) | (.002) | (.008) | (.001) | (.000) | (.000) | (.001) |
| Others household | -.038*** | -.007*** | -.047*** | -.022*** | -.002*** | -.002*** | -.014*** | -.001*** |
| members work | (.001) | (.001) | (.001) | (.001) | (.001)1 | (.001) | (.001) | (.001) |
| Household size | .010*** | .003*** | 009*** | .004*** | 0.007 | .001*** | .002*** | .001*** |
| | (.001) | (.001) | (.001) | (.001) | (.052) | (.001) | (.001) | (.000) |
| Married | -.007** | -.003 | -.004 | -.002 | -.006 | -.002 | -.001 | .001 |
| | -0.003 | (.002) | (.002) | (.002) | (.221) | (.032) | (.004) | (.001) |
| Yearly dummies | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Regional dummies | No | Yes | No | Yes | No | Yes | No | Yes |
| Mc Fadden R2 | 0.214 | 0.377 | 0.245 | 0.313 | 0.241 | 0.387 | 0.288 | 0.397 |
| N | 41320 | 3921 | 53389 | 5815 | 13387 | 1819 | 45156 | 3205 |

Marginal effects after multinomial logit regression for unemployment, inactivity and employment status (base outcome).
Robust standard errors in parentheses. * significant at 10%; ** significant at 5%, *** significant at 1%.
Marginal effects computed for discrete change of dummy variables from 0 to 1.
Own estimation, weighted data from EU-LFS extraction (2002-2007).

Table 2.7: Individual level determinants of unemployment

## 2.4 Conclusions

This chapter presents new evidence on how work experience abroad affects the labour market performance of return migrants in CEE countries. We focused on effects for occupational choices and for the labour income upon arrival in the home country. Pooled cross-sections extracted from the EU-LFS allowed us to conduct the empirical analysis from a cross-national perspective. The EU-LFS includes a question on place of residence one year before which enabled us to identify a sample of about 2,500 recent returnees across 7 countries for the period 2002-2007.

In terms of observable characteristics we find that return migrants are positively selected in most countries included in our analysis. At the time of return they are younger both compared to non-migrants and to the recent migrants still residing abroad. Apart from Romania, all countries seem to attract returnees who attained more years of formal education than non-migrants.

Consistent with previous (country-specific) results from the empirical literature, our cross-country estimates show that returnees receive significant income premia both from self-employment and from dependent employment. At the same time the results suggest that being exposed to work abroad increases the propensity of migrants to either not participate in the labour market or to switch into self-employment upon return.

With regard to the selectivity on unobservables the evidence is rather mixed. While this appears to be negative when estimating the individual income effects it turns out positive for the decision to switch into self-employment.

Both results confirm other empirical and theoretical findings on the performance and occupational choices of return migrants. The intuition behind is that migrants lack characteristics which are valued on the home labour market (like e.g. network ties and specific labour market experience and local human capital) and posses others which make them prone to become self-employed (like e.g. entrepreneurial skills and risk proclivity).

At this point it is still very early to draw wider conclusions from the analysis. The fact that return migrants can expect a reward for their temporary migration decision in the form of a higher income after they return tends to make it more attractive for potential migrants to leave their home country temporarily and to return after a certain period abroad. In other words, it would tend to enhance the relative attractiveness of temporary migration as opposed to permanent migration. It would also suggest that migrants have a stronger incentive to return once the economic outlook in the host countries worsens relative to the situation in the home country. A thorough investigation of important issues related to return migration such as its impact on the human capital stock of the home country and - possibly - the enhancement of the entrepreneurial base by increasing the number of self-

employed in the workforce would require a more detailed investigation as regards the professional development of return migrants after their return to the home country.

# Chapter 3

# Selection of migrants and returnees: evidence from Romania

Chapter 2 presented cross-country evidence, based on both aggregate and individual level data, to attest the importance of return migration for Eastern European countries. We found that in most CEE countries the share of return migrants in the working age population is between 6 and 13 per cent. To grasp the likely impact of this return migration on CEE countries it is crucial to understand the selection of migrants and returnees. We do this for the case of Romania.

In this chapter we use census and survey data to analyse the selection of Romanian migrants across destination countries as well as into return migration. We characterise the skills of migrants to determine if their migration (and return) choices are consistent with the predictions of the human capital (Roy) model of migration.

We construct measures of selection across skill groups and estimate the average and the skill-specific premium for migration and return for three typical destinations of Romanian migrants after 1990. Once we account for migration costs, we find evidence that the selection and sorting of migrants is driven by different returns to skills in countries of destination. Our identification strategy for the effects of work experience abroad permits a cautious causal interpretation of the premium to return migration. This premium increases with migrants' skills and drives the positive selection of returnees relative to non-migrants. Based on the compatibility of the results with rationality in the migration decisions, we simulate a rational-agent model of education, migration and return. Our results suggest that for a source country like Romania relatively high rates of temporary migration might be associated with positive long-run effects on average skills and wages.

## 3.1 Introduction

For countries of origin, a positive selection of migrants and returnees, in terms of their skills, may represent both a challenge (risk of brain drain) and an opportunity (incentives for learning and improvement of skills). Did the increased mobility of Eastern Europeans in the 90's harm their countries of origin? How did migration and return contribute to the productivity and income of workers? What will be the consequences of further increases in labour outflow due to the freedom of movement in the EU? This chapter addresses these questions. We quantify the size and selection (on observable characteristics) of migration and return for the case of Romania and we analyze the consequences of international mobility on its levels of wages and productive skills. Being the second most populous country in Eastern Europe (after Poland) and having migrants in several destination countries, Romania is an interesting case also because of the significant rate of return migration.

We combine census and large survey data to identify Romanian migrants in three main destination countries (Table 1.2 in the introduction provides an overview of the collated individual level data for this thesis). We match this information with micro-data on non-migrants and returnees in Romania. The three destination countries are Spain, Austria and the US. We chose these countries because, as explained in section 3.2, they span very well the different ranges of institutions and labour market types across the favoured destinations of migrants from Romania and other CEECs. For these countries, we use census data (2000-2001) as well as data from the EU-Survey on Income and Living Conditions (EU-SILC) for Austria and Spain, and from the National Demographic Survey (NDS) of Romania (2003). Our data set provides a picture of the relative size and relative characteristics (including earned wages) of the cross-section (circa 2002) of individuals born in Romania in three different groups: those who have always resided in Romania (non-migrants), those who migrated and returned (returnees), and those who live abroad (migrants) specifically in the US, Austria or Spain.

Our results suggest that migration choices are responsive to economic incentives: workers in specific skill cells (defined by education, age and gender) migrate in larger shares to countries which pay higher wage premia for those skill cells. We observe that Romanian migrants to the US are positively selected because the wage premium of migrating to the US is much higher for the high skill-cells (in terms of wage earning ability). In contrast, Romanian migrants to Spain are more likely to come from low-skill cells, as the wage premium of migrating to Spain is larger for low skilled than for high skilled-cells. Austria exhibits a migration premium neutral to skill level. This rationality of migration is consistent with other findings for CEE migrants (e.g. Budnik 2009). Romanian returnees are positively selected on observables and this also supports the other finding of a higher return premium for highly skilled. As we

have a richer set of variables for returnees, we also provide evidence that selection of returnees on unobserved characteristics seems to be negative. Hence, our estimate of the return premium can be viewed as a lower-bound of the actual return premium.

These estimation results are consistent with rational choice. In the last section of this chapter we use a model of schooling, migration and return, developed previously by Mayr and Peri (2009) to evaluate the aggregate (skill and wage) effects of migration for Romania. In order to quantify these effects, we use the estimated return premium and the observed scale of return-migration. We adapt the parameters to the case of Romania to obtain the long-run impact of increased mobility, accounting both for return migration and for the indirect effects from incentives on schooling.

The next section 3.2 presents some stylized facts of migration and return for Romania and other CEECs during the early 2000s. Section 3.3 describes the individual level data and the measures of average selection and average premium we use in the analysis. Section 3.4 presents our estimates for selection and return premia. Section 3.5 shows empirical evidence of the relation between migration frequency and premia across skill groups. Section 3.6 uses some of our estimates and the empirical moments in a model to simulate the long-run effects of further relaxing migration constraints for Romania on average skills and wages. Section 3.7 concludes.

## 3.2 Stylized facts of temporary migration from Romania

In the period immediately after the regime change and the opening of the borders in 1989, migration from Romania was first characterised by mass emigration of ethnic minorities (German and Hungarian). However, by the mid 1990s a new pattern of labour migration to various European and overseas destinations emerged. Labour outflows increased steadily against the background of a slow pace of economic restructuring which resulted in a large decline in GDP, high inflation, mass layoffs, decreasing real wages and rising unemployment (Earle and Pauna 1996, 1998). Deindustrialization led to a decrease of industrial employment by almost 3 million jobs and particularly affected younger and older workers, who were less likely to find new employment opportunities (Voicu 2005).

Based on evidence gathered from previous studies (e.g. Diminescu and Lăzăroiu 2002, Baldwin-Edwards 2007) we argue that the destination countries can be grouped in three main categories with respect to the type of selection of Romanian migrants compared to non-migrants[1]. First, a strictly positive selection seems to characterise

[1]We use sorting and selection in a similar way in this chapter. However, when we discuss sorting we mainly compare migrants to specific destinations to the overall pool of migrants leaving Romania in a given period. When we discuss the selection patterns we compare migrants from Romania with

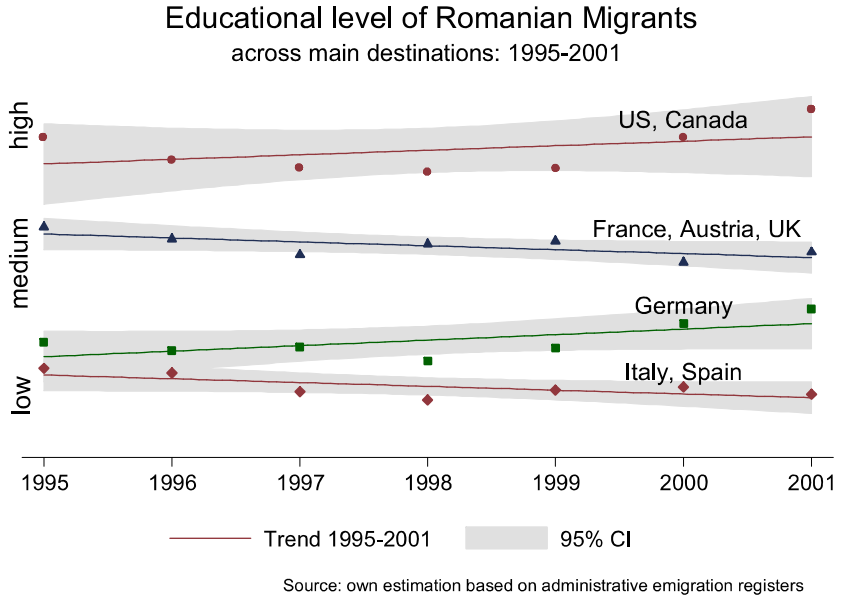



Figure 3.1: Sorting of Romanian migrants across destinations, by education. The data are based individual level records from administrative registers.

migration flows to traditional immigration countries (US, Canada, Australia). These flows were rather small but persistent and included a significant share of young people who migrate for educational purposes (Diminescu 2003). In the early 2000s, the US was among the main countries from where migrants returned and settled back in Romania (OECD 2008). A second group of destination countries were characterised by a neutral average selection of migration from Romania. These were the continental European countries which received most of the Eastern European migrants over the 1990s: Germany, Austria and France (Sandu et al. 2006; Diminescu 2003). Third, particularly towards the end of the 1990s and the early 2000s, large flows of Romanian migrants arrived in Mediterranean countries, manly in Spain and Italy, but also, to a lesser extent, in Portugal and Greece (Sandu et al. 2006, Diminescu and Lăzăroiu 2002). These flows were characterised by a negative selection. Compared to non-migrants, most migrants were less skilled, already had a longer migration history, often involving informal or illegal employment spells, and made use of network ties established in their communities of origin (Elrick and Ciobanu 2009; Şerban and Voicu 2010).

One drawback of these previous studies is that they only use aggregate data or qualitative evidence. However, to substantiate our hypothesized typology of destination countries we exploit (besides the census and survey data described in section 3.3) also administrative data on Romanian migrants who registered a change in res-

non-migrants (stayers).

| Sample: | Romania NDS, 2003 | OECD Country Census 2001 |
|---|---|---|
| | returnee as ratio of population | living abroad (OECD) as ratio of population |
| All | 0.049 | 0.032 |
| By education groups: | | |
| Tertiary | 0.058 | 0.126 |
| Secondary | 0.056 | 0.126 |
| Primary completed | 0.034 | 0.016 |
| No degree completed | 0.015 | 0.039 |

Note: Own calculations based on micro NDS data (first column) and aggregate data from Docquier and Marfouk (2006) (second column).

Table 3.1: Migrants and returnees in Romania by education

idence abroad. These data cover records for more than 95,000 migrants who left Romania in the period 1995-2001,[2] including information on their individual characteristics and their choice of destination. Using these data, Figure 3.1 shows the sorting of Romanian migrants by education across the main countries of destination. The vertical axis measures the ratio between the fraction of tertiary educated among migrants towards specific destinations to the same fraction among non-migrants in Romania. The results confirm the described selection pattern in terms of the typology of destination countries for Romanian migrants.

For the period 2002-2003, we also construct a measure of the stock of Romanian migrants in OECD countries and a measure of returnees, both as shares of the total population in Romania. Moreover,we characterise the distribution of migrants residing in OECD countries (using data from Docquier and Marfouk 2006) and of returnees (using microdata from the NDS 2003) by education. These data are summarized in Table 3.1. The results indicate that both migrants and returnees are positively selected over the education variable, relative to the total population. The share of returnees is smallest in the group of people with no degree (and for migrants among those with primary education) while it is largest among those with tertiary education (similarly for migrants). The selection of migrants seems even more skewed towards the highly educated relative to returnees. However, these aggregate data hide the already mentioned considerable variation in the selection patterns across destination countries. Neither the administrative data, nor the evidence collated in previous studies can be used to identify the underlying factors that explain this variation.

[2]Due to the data collection process, the records are reliable and representative only for this period. We were therefore not able to include other years in our cross-tabulations based on individual level records. We thank Mr. Dorel Gheorghiu (National Institute of Statistics, Bucharest) for providing access and valuable insights on these data.

Matching the NDS data to census data we are able to identify Romanian migrants in three of the main destination countries: the US, Spain and Austria. These countries span very well the type of destination countries for Romanian migrants, each of them corresponding to one of the three selection patterns described above. The US belongs to the group of countries receiving positively selected migrant from Romania, being an Anglo-Saxon country with high returns to skills and relatively unregulated labour markets. Austria is a continental-European country (similar to Germany) with more regulation in the labour markets, lower skill compensation, restrictive immigration policies and receiving on average neutrally selected Romanian migrants. Spain (along with Italy) received a large number of negatively selected Romanian migrants and has a rather regulated labour market, with a high concentration of unskilled jobs in construction and manufacturing and thus low skill premia. Our analysis based on individual data will characterise into more detail the features of selection for both migrants and returnees. It will relate these to skill-specific premia in order to test if economic rationality is consistent with the observed selection and sorting of Romanian migrants across destinations.

## 3.3 Data and methodology

Following the literature on selection of migrants (e.g. Chiquiar and Hanson 2005, Fernandez-Huertas Moraga 2011) we first characterise the distribution of non-migrants, migrants and returnees based on their combination of observable characteristics. We group individuals into cells to estimate their wage-earning ability and their probability of employment (in Romania). We call the wage-earning ability the skill of that group of workers. For each cell, we count non-migrants, returnees and migrants to the US, Austria and Spain to determine how these groups compare to each other in their distribution across skills. We define the selection of migrants (positive or negative) as the difference in average skills between migrants and non-migrants. We assess then if the likelihood of selecting oneself into a group (non-migrants, migrants or returnees) is systematically related to skills.

Our data include wages by each skill cell, both for Romanian migrants (in the US, Austria and Spain) and for non-migrants and returnees (in Romania). We can therefore calculate the average and the skill-specific premium to migrate and to return. Using a simple regression analysis (by skill), we can relate the probability (frequency) of migration/return to the corresponding skill-specific premium. Accounting for the fact that the costs of migration may vary by skill, this allows us to investigate the economic rationality of migration and return. This is a simple modification of the Roy (1951) model to measure selection in many skill groups and to estimate the migration premia with different selection rules, for returnees and permanent migrants.

We describe the individual data and the skill structure in section 3.3.1. Section 3.3.2 discusses in detail the measures of average selection on observables. In section 3.3.3 we provide some empirical evidence regarding the potential selection of returnees on unobservables. The construction of the average and skill-specific migration and return premium is described in section 3.3.4. Section 3.3.5 then presents the model that we use in our econometric analysis of the determinants of selection.

### 3.3.1 Individual data and wage decomposition

We match information from census data (for employment) and population surveys (for wages) to analyze the characteristics of three groups of Romanian workers around the year 2003: non-migrants, migrants and returnees.

The data for Romania are from the National Demographic Survey (NDS 2003), as well as from the Census 2002. The NDS data were collected by the Center for Regional and Urban Sociology (CURS) and were designed to be representative both at the national and regional level. Our restricted sample has more than 35,000 observations, including 1,400 returnees (defined as those who had spells of at least six months of employment abroad), and covers all relevant individual characteristics besides information on migration choices[3]. We use census and income surveys for the three destination countries. For the US, we construct employment, population and average monthly wage data on Romanian migrants by observable characteristics using the 2000 Census. For Spain, we use the 2002 Census for employment and population data on Romanian immigrants and the EU-SILC (2004) for average monthly wage data. For Austria, we use the 2001 Census for employment and population data on Romanian immigrants and the EU-SILC (2004) for the average monthly wage data. We convert all wages into 2003 US$ and we consider that database as a cross section of Romanian individuals circa 2003, either resident in Romania (non movers or returnees) or resident in the US, Austria or Spain. We restrict our sample to individuals between 15 and 65 years of age.

In the constructed data set we observe for each individual $i$ a vector of characteristics $X_i$ and his migration status, i.e. non-migrant in Romania ($NM$), migrant residing in a destination country $c$ ($Mc$), or returnee ($R$) in Romania after an employment spell abroad. Following Chiquiar and Hanson (2005), the vector $X$ includes four relevant characteristics defined by the following categorical variables: education ($Edu$), with the categories No Degree, Primary, Secondary and Tertiary; age ($Age$), taking ten values from 15 to 65 in 5 years intervals; gender ($Gen$), with the two categories $M$ and $F$; and family-size ($Fam$), with four categories: Single with no children, Married with no children, Single with Children and Married with Children.

[3]The constructed dataset and the used sources are listed in Table A1 of the appendix.

These characteristics identify the observable features of an individual in our data set. We use the notation $x_i = (Edu_i, Age_i, Gen_i, Fam_i) \in X$ to denote the vector of characteristics of individual $i$. We allow for the fully saturated model in observable characteristics, so individuals can be put in one of 320 cells spanned by $x_i$ (= 4 education by 10 age by 2 gender by 4 family groups). Each individual also has a "migration status" $k_i$ attached to herself as she can be a non-migrant in Romania, a migrant residing in country $c$ (US, Spain or Austria) or a returnee, hence $k_i \in \{NM, M_{US}, M_{AUT}, M_{SPA}, R\}$. Our data set also allows us to actually observe (for Romania and US) or to impute (for Spain and Austria) based on their occupation and industry, the wage of each individual $w_i$[4]. The wages for Romanian migrants in Austria and Spain are imputed using the information we have from EU-SILC on native workers. For the EU-SILC, Austria uses a random sample of addresses, the sampling units are dwellings registered in the Central Residence Register (ZMR, Zentrales Melderegister). All households and individuals for the sampled addresses are interviewed. The Spanish SILC is an annual survey with a rotational-group design. The sample comprises four independent sub-samples, each of which is drawn according to a stratification based on Census sections. For Austria we have about 4,500 households and 8,750 individuals and for Spain 7,250 households and 16,000 individuals. I also explain what we meant by using occupations and industry. If Romanian migrants face a "wage penalty" compared to natives with similar levels of education, our imputation might overestimate their wages. However, this does not change the interpretation of our results. we can treat our estimated selection measures for these countries as upper bounds and we still find a negative and respectively a neutral selection of Romanian migrants to Spain and Austria.

We decompose the log wage of individual $i$ working in country $j$ into four components as follows:

$$\ln(w_{ij}) = \ln w(x_i) + \ln p_j(x_i) + I(k_i = R) * \ln r_j(x_i) + \varepsilon_{ij} \tag{3.1}$$

The term $\ln w(x_i)$ is the mapping from individual observable characteristics $x_i$ into log wages in Romania (2003). Our measures of wage-earning abilities and the corresponding wage premia are conceptually equivalent to those used e.g. by Borjas (2001) and Dustmann et al (2010). But we apply them in a different context. We are neither looking at interregional arbitrage via labour mobility nor interested in the direction of causality between migration and wages. Assuming that the observable

[4]As we do not observe individual wages in the Spanish and Austrian census (and the EU-SILC is too small to have representative wages for Romanian migrants in Austria and Spain), we attribute the average wage based on occupation-industry (from the respective population surveys). The basic idea is that observable characteristics affect the type of occupation-industry in which a person works and the wage is determined by those attributes. In the rest of the paper we will call individual wages the wages constructed following this procedure for residents in Austria and Spain. For residents of Romania and the US we have the actual individual wages.

characteristics $x_i$ are the main determinants of wage-earning abilities of individuals, the function $\ln w(x_i)$ translates the characteristics into a wage earning potential in Romania. The term $\ln p_j(x_i)$ is the migration premium (or "location" premium as defined by Clemens, Montenegro and Pritchett 2008). It represents the extra wage (in log points) obtained by individual $i$ from working in country $j$ as migrant. The base country, Romania, will be identified as $j = 0$ and we set, by definition, $\ln p_0(x_i) = 0$. We allow this premium to vary with individual characteristics across skill groups. The term $\ln r_j(x_i)$ is the "return" premium. It is the premium (positive or negative) from being a returnee ($k_i = R$) relative to being a non-migrant $NM$. Finally, $\varepsilon_{ij}$ are the idiosyncratic effects on the earning abilities of individual $i$ in country $j$, which we first assume to have zero-mean in each cell $x_i$ of the set $X$ and to be uncorrelated with $x_i$, $E(\varepsilon_{ij}/x_i) = 0$. Unobservable wage-earning characteristics of individuals within an observable skill-cell $x$ are thus assumed to be independent and identically distributed with zero average. However, we will discuss later the possibility of non-random unobservable characteristics and its implications for selection issues.

### 3.3.2 Measures of selection

Our goal is to define two sets of concepts that are crucial to characterise the process of migration and return and, in an economic theory of migration, should be related to each other. The first set of concepts are the selection of migrants (relative to non-migrants) and the selection of returnees (relative to non-migrants) along the wage-earning ability (skill) dimension. Are migrants (and returnees) selected, on average, among individuals with higher earning abilities (positive selection) or lower earning abilities (negative selection) than the average non-migrants? We will primarily characterise the selection of migrants along the observable wage-earning abilities, following the argumentation in Hartog and Winkelmann (2003) against correcting for selectivity when the sample of migrants is small relative to the sample of non-migrants. We will however discuss, in light of the existing literature, what may be the selection of migrants along unobservable skills and how it may affect our findings. For returnees, as we have a richer set of variables for them, we will use some identifying assumptions to distinguish selection on unobservables from the return premium.

The second set of concepts to be measured are the "premia" from making a migration decision; in particular the premium for being a "migrant" and that for being a "returnee". For given observable characteristics (hence accounting for wage-earning ability selection) migrants should earn more than non-migrants. This would be needed to justify the paying of migration costs in any economically motivated theory of migration. However, how does this premium vary with skills and country of destination? We allow the returns to skills to vary across countries. Even more interesting would be to know if, for given observable skills, returnees earn more or less

than non-migrants. If there is a premium for returnees, then temporary migration has a permanent positive effect on earning abilities. Hence migration and return can be part of a strategy to increase the living standards and returnees are not, on average, those who failed abroad. Like for the migration premium, it is also very relevant to understand whether the return premium depends (and how) on skills.

Let us define, in turn, the formulas to obtain each of these terms: the average selection of migrants and returnees on observables and the average premium for migrants and returnees, as well as their dependence on observable skill. We assume throughout this chapter that migrants make the decision to migrate and return at the start of the process and don't change their mind once they are in the destination country.

### Average Selection

The average (logarithmic) wage-earning ability of a non-migrant ($NM$) with observable characteristics $x$, call it $\ln \widehat{w}(x)$, is summarized by the average individual wage of all non-migrant individuals in observable cell $x$. Hence $\ln \widehat{w}(x) = (1/NM_x) \sum_{i \in x} \ln w_{i,NM}$ where $NM_x$ is the observed total employment in cell $x$. The variable $\ln \widehat{w}(x)$ can be called (wage-earning) skill of group $x$. The average observed skill of the non-migrants in Romania ("country 0"), corresponds therefore to their average log wage based on observables:

$$\ln w_{NM,0} = \sum_{x \in X} \ln \widehat{w}(x) f_{NM}(x) \tag{3.2}$$

The term $f_{NM}(x) = NM_x / \sum_{z \in X} NM_z$ is the observed relative frequency of non-migrant workers, $NM$ in cell $x$. If, conditional on $x$, the idiosyncratic wage residuals in 3.1 converge in probability to 0, $(1/NM_x) \sum_{i \in x} \varepsilon_{io} \xrightarrow{p} 0$, then with a large enough sample, such as the census, the value $\ln \widehat{w}(x)$ calculated from the sample would converge to $\ln w(x_i)$. In order to identify how migrants compare to non-migrants in their observable skills (wage earning abilities) we construct the counter-factual wage distribution based on the observable characteristics of migrants and the corresponding observed wage of non-migrants for each cell $x$. In particular we define the average skills of migrants to country $c$, based on observables, as:

$$\ln w_{Mc,0} = \sum_{x \in X} \ln \widehat{w}(x) f_{Mc}(x) \tag{3.3}$$

The term $f_{Mc}(x) = Mc_x / \sum_{z \in X} Mc_z$ is the relative frequency of migrants to country $c$, $Mc$, observed from the census of country $c$. This method accounts in a fully non

parametric way for the fact that migrants are non-randomly selected from the original population and uses the relative frequencies of migrants to non-migrants in each skill-cell to correct for this. Moreover, the differences in wage earning abilities (skills) between migrants and non-migrants are evaluated at home wages, assigning thus to each skill its domestic price (in Romania).

Similarly, to identify how returnees to Romania compare to non-migrants we construct the average wage-earning ability of returnees, based on the observable characteristics of returnees and the log wage of non-migrants $\ln \widehat{w}(x)$:

$$\ln w_{R,0} = \sum_{x \in X} \ln \widehat{w}(x) f_R(x) \tag{3.4}$$

Analogous to (3.3) the term $f_R(x) = R_x / \sum_{z \in X} R_z$ is the relative frequency of returnees in skill cell $x$. Given the definitions provided above, we define the average "selection"($S$) based on observables ($O$) of migrants to country $c$, relative to non-migrants as:

$$OS_{Mc,NM} = \ln w_{Mc,0} - \ln w_{NM,0} \tag{3.5}$$

If expression (3.5) is positive, migrants to country $c$ are selected on average with wage-earning observable characteristics above the average for non-migrants. This is exactly the definition of positive selection. Vice-versa, if it is negative, migrants to country $c$ are selected, on average, below the average wage-earning ability of non-migrants. Moreover, quantitatively, as the expression is in log differences, it approximates the difference in wage earning abilities as a percentage of the average non-migrant wage. Similarly, we define the selection of returnees (on observables) relative to non-migrants as:

$$OS_{R,NM} = \ln w_{R,0} - \ln w_{NM,0} \tag{3.6}$$

Like above, a value of $OS_{R,NM} > 0$ implies a positive selection of returnees relative to people who did not migrate.

There are two issues that may bias the selection of migrants and returnees according to observable characteristics, produced by (3.5)-(3.6). Those biases may produce the appearance of positive or negative selection when there is none or vice versa. The first issue is that for given observable characteristics participation rates into employment in Romania may be systematically different from participation in the labour market of country $c$. The second is that there may be unobserved characteristics correlated with the $x$ (hence not random and not zero-mean within group $x$) and those may differ between migrants and non-migrants. We will discuss them in turn.

**Participation into employment and observable characteristics**

The rate of participation into employment for a group with characteristics $x$ can be different at home and abroad. It is easy to think that if a skill group $x$ is paid a higher wage in a country this may attract workers of that skill and push a larger fraction of them to work. This may affect the calculated skill selection, if we base our evaluation of formulas (3.5) to (3.6) on employment data. For instance, if migrants to country $c$ have characteristics that are identical to non-migrants but, once in the labour market of country $c$, their participation to employment is relatively larger in the high wage-potential groups compared to their participation in Romania, the method above will produce the appearance of positive selection, when there is in fact no selection. Had those migrants stayed in Romania, they would have earned, on average, as much as non-migrants. To avoid this problem, we should correct the relative frequency of migrants in constructing their average wage earning ability $\ln w_{Mc,0}$. In particular, rather than the frequency of characteristic $x$ in employment we should use its frequency in the *population* of migrants and correct those population frequencies by the participation rates of each group $x$ in Romania. Such correction allows us to compare the average wage-earning ability of migrants, had they stayed in Romania, with that of non-movers. Formally we can define the "participation-corrected" average wage earning ability of migrants to country $c$ as follows:

$$\ln w_{Mc,0}^{PART_0} = \sum_{x \in X} \ln \widehat{w}(x) f_{Mc}^{PART_O}(x) \tag{3.7}$$

where $f_{Mc}^{PART_O}(x) = \theta_x^0 Mc_x^{POP} / \sum_{z \in X} \theta_z^0 Mc_z^{POP}$ and $Mc_x^{POP}$is the total population (rather than workers only) with characteristic $x$ who migrated to country $c$, while $\theta_x^0$ is the employment-population ratio for workers of characteristic $x$ in Romania ($\theta_x^0 = NM_x/NM_x^{POP}$). We will use the empirical participation rate of non-migrants in each cell from the Romanian Census 2002 as a non-parametric estimate of $\theta_x^0$, and the data on the population $Mc_x^{POP}$ of migrants in group $x$ in country $c$ from the Census of country $c$. The "double selection" into migration and into employment that is considered in many recent papers (e.g. Chiquiar and Hanson 2005, Fernandez-Huerta Moraga 2008, Piracha and Vadean 2009) is addressed here in a completely non-parametric way. Assuming that we have identified the relevant observable characteristics that determine the probability of migrating and of participating into the labour force, we use a fully non-parametric relation between those and the migration probability, and between those and participation at home, to identify the selection on wage-earning abilities. In particular, the variable:

$$OS_{Mc,NM}^{PART_0} = \ln w_{Mc,0}^{PART_0} - \ln w_{NM,0} \tag{3.8}$$

identifies the difference in wage-earning ability of migrants had they remained at home relative to the wage-earning abilities of non-migrants. This is the cleanest comparison possible to identify the type of migrant selection on observable wage-earning abilities. Similarly, we can correct the skill selection of returnees by imputing to them the employment-population ratio of non-migrants.

**Unobservable characteristics**

The unobservable individual characteristics denoted as $\varepsilon_{ij}$ in expression (3.1) have been assumed to be uncorrelated with $x$ so that $E(\varepsilon_{ij}/x) = 0$. However, it is possible that some unobservable characteristics are correlated with $x$ so that $E(\varepsilon_{ij}/x) = g(x)$. For instance, if unobserved wage-earning abilities are larger, on average, for groups with larger observable wage earning ability, then $g(x)$ can be systematically positively correlated with $\ln w(x)$. Under these circumstances the term $(1/N_x)\sum_{i\in x}\varepsilon_{io}$does not converge in probability to 0 and hence cannot be approximated to 0 using the Census sample. In fact, if different selection processes operate on the unobservable characteristics it may even be possible that: $E(\varepsilon_{io}^{Mc}/x) = g^{Mc}(x) \neq E(\varepsilon_{io}^{NM}/x) = g^{NM}(x)$ which means the conditional average of unobservable wage earning ability for a group $x$ is different between migrants and non-migrants.

This departure from the original assumptions implies that the total average skill selection indicator $S_{Mc,NM}$ will equal:

$$S_{Mc,NM} = OS_{Mc,NM} + US_{Mc,NM} = \ln w_{Mc,0} - \ln w_{NM,0} + \sum_{x\in X} g^{NM}(x)f_{NM}(x) - \sum_{x\in X} g^{Mc}(x)f_{Mc}(x) \tag{3.9}$$

where the term $OS_{Mc,NM}$ is constructed as in expression (3.5) and is the selection based on the observables, while the term $US_{Mc,NM} = \sum_{x\in X} g^{NM}(x)f_{NM}(x) - \sum_{x\in X} g^{Mc}(x)f_{Mc}(x)$ is capturing the selection of migrants over the unobserved wage earning abilities. The term $US_{Mc,NM}$ cannot be constructed with our data. To do this one would need information on the wage paid to migrants in Romania before they migrated. Some recent studies on Mexican data (Fernandez-Huertas Moraga 2011, Kaestner and Malamud 2010) have used data on pre-migration wages and have evaluated such a term for Mexican migrants. Clemens et al. (2008) also evaluate this for the Philippines, South Africa and Mexico. These are countries not too far from the income level of Romania, hence we can look at the average selection of migrants on unobservable skills there, especially relative to selection on observables, to gather an idea of how large that phenomenon could be. While it is hard to have a clear theoretical expectation on the sign and magnitude of the selection on unobserv-

ables, one consideration may help. A country that rewards wage-earning skills would attract more skilled workers along the observable and unobservable dimension. In accordance with this intuition most of the existing estimates of observable and unobservable selection either find no relevant selection on unobservables (Kaestner and Malamud 2010) or find selection on unobservables of the same sign and smaller scale than selection on observables (Budnik 2009, Fernandez Huertas-Moraga 2011 and the relevant cases in Clemens et al. 2008). It is likely, therefore, that selection on unobservable is in the same direction and smaller than selection on observables.

### 3.3.3 Selection bias and return migration

The selection problem is somewhat different for the case of return migrants. Our main concern is that a considerable part of the observed returns to work experience abroad might result from the fact that return migrants are not randomly selected with regard to their unobservable characteristics. Unlike the evidence on the selection of migrants, for returnees the literature provides no clear relationship between the types of selection generated in observed and unobserved characteristics (Borjas 1987, Borjas and Bratsberg 1996): positive selection in observables might well coincide with negative selection in unobserved characteristics, or vice versa.

If being a return migrant is endogenous in the wage function, i.e. if the return migrant status is correlated with the wage residuals in (3.1), the selection bias might completely mask the effect of work experience abroad. However, here the richer data we have available on non-migrants and returnees from NDS allow us to characterise the selection bias under some identifying assumptions.

Our identification strategy uses the variation in migration choices across different religious groups as well as due to the availability of migrant network ties. Network ties are defined by the presence of family members or friends abroad while religious groups are constructed using the self-reported religious affiliation. The identifying assumption behind is that having connections to family members or friends abroad significantly increases the propensity to migrate temporarily (relatively to no-migration) without affecting individual wages (our measure of earnings excludes remittances from family members abroad). The same holds true for being affiliated to a minority religious group. Sociological research (e.g. Sandu 2005) already documented the fact that members of protestant communities (Baptists, Pentecostals, Adventists) have a much higher propensity to migrate than the Orthodox majority. Cross-border community networks established around these churches (an estimated 20 per cent of Romanian migrants in the US and Spain are neo-protestants, compared to just about 5 per cent among non-migrants reported both in the 2002 census and in our data) play an important role in facilitating temporary migration for work abroad. Members of the other main minority religious groups (Catholic and Protestant) also

have a higher propensity to migrate and return compared to non-migrants. Overall, in our sample just under 10 per cent of non-migrants belong to a minority religious group, compared to more than 21 per cent among returnees[5]. Using this strategy, we estimate various models to make sure that we obtain the right direction of the selection on unobservable characteristics for return migrants compared to stayers.

[5]While those variables may also affect selection of permanent migrants relative to non-migrants we do not have them available for Romanians who live abroad. Hence we cannot do the same exercise for selection of migrants.

| | (1) Average log wages | (2) Diff. in means by migration status | (3) OLS regression estimates | (4) ML endogeneity correction | (5) IV regression estimates | (6) Matching estimates (ATT) |
|---|---|---|---|---|---|---|
| All | 1.167 | .163 | .084 | .161 | .275 | .089 |
| | | (.023) | (.021) | (.056) | (.129) | (.026) |
| Women | 1.055 | .085 | .094 | .252 | .171 | .079 |
| | | (.051) | (.046) | (.076) | (.440) | (.056) |
| Men | 1.284 | .092 | .086 | .169 | .202 | .085 |
| | | (.026) | (.024) | (.064) | (.113) | (.029) |

Notes: The table reports the effects of return migration on (log) wages using the NDS 2003 data.
In colum 2, the raw means returnee vs. non-migrant are 1.14 vs. 1.05 for women and 1.36 vs.1.27 for men.
The covariates used in columns 2-5 are age, education, gender and family characteristics.
In column 4, the full ML estimates (Maddala 1983) correct for the endogeneity of return migration using migrant network ties (kin abroad) and minority religion (catholic, neo-protestant, or Muslim) as exclusion restrictions. These are also used to instrument for the endogeneity of return migration in the IV 2SLS regression in colum 4 (first stage F-statistic: 28.82, Sargan test: 4.83)
The matching estimates in column 6 are based on common support by age, gender, education and lagged regional migration rates obtained from census data.
Standard errors in parantheses. Full data for 6,249 women; 5,743 men, 634 returnees (506 men, 128 women).

Table 3.2: Effects of return migration on earnings

Table 3.2 reports the estimates of the return to work experience abroad. Columns 1 and 2 provide intuition for the raw (uncontrolled) differences in mean wages between non-migrants and returnees. The OLS estimates in column 3 add controls for age, gender, education and family characteristics. In order to account for the endogeneity of return migration we estimate first a full maximum likelihood model (Maddala 1983) in which we add some structure by explicitly considering the binary nature of the return migrant status in a first-stage Probit model. We use the two variables indicating the availability of migrant network ties and the religious affiliation as instruments in the first stage. Both act in the same way, i.e. they seem to facilitate temporary migration and do not otherwise impact on wages. The estimated corrected return premium shown in column 4 is significantly higher than the OLS estimate indicating that returnees are negatively selected in terms of unobserved characteristics. This negative selection is confirmed by the IV 2SLS regression reported in column 5 which uses the same two variables to instrument for the endogeneity of return migration. Under all specifications of the IV model, the first-stage F-statistics are high (above 20) and both network ties and religious affiliation are strong predictors of migration and return. Column 6 shows the matching estimates based on common support by the same variables as the covariates in the other models.

The conclusion from these models is that, if at all, return migrants are likely to be negatively selected on unobserved characteristics. This is also in line with findings of other studies on return migration in Eastern Europe (e.g. Hazans 2008, De Coulon and Piracha 2005, Co et al. 2000) who usually find returnees to be negatively selected on unobserved characteristics. Hence we can safely assume that our uncorrected estimates represent a lower bound for the return premium.

### 3.3.4 Income premia and selectivity patterns of migration

A non-parametric method similar to the one used for the selection of (return) migrants can be used to identify, under some assumptions, the average premia, both for migrants and for returnees. Consider the counter-factual wage (3.4) that returnees would earn if they were paid as non-migrants, with the same characteristic $x$, and the difference between this and their actual average wage. This difference represents exactly the average premium to returnees (call it "$PR_{R,0}$") plus a term representing the selection of migrants on unobservables:

$$\sum_{x \in X} \ln w_R(x) f_R(x) - \sum_{x \in X} \ln w_{NM}(x) f_R(x) = \sum_{x \in X} \ln r(x) f_R(x) + US_{R,NM} = \quad (3.10)$$
$$= PR_{R,0} + US_{R,NM}$$

The term $\ln r(x)$ (from the decomposition of individual wages in expression 3.1) is the "return" premium for being a returnee and may depend on $x$. In addition, if returnees differed systematically on unobservables from non-migrants, then there would be an extra term $US_{R,NM}$ capturing the selection on unobservables. If this term is negative as indicated by our results in the previous section, then the difference in average log wages represents a lower bound of the true return premium.

Finally, we can compute the wage premium that the average migrant to country $c$ will receive relative to what she would have earned at home. This is the "migration" or "location" premium, i.e. the fact that the receiving country pays more for given observable characteristics than the home country Romania. The average premium to migrate to country $c$ (plus the selection on unobserved characteristics) is calculated using the observable characteristics of migrants to that country as:

$$\sum_{x\in X} \ln w_{cM}(x) f_{Mc}(x) - \sum_{x\in X} \ln w_{NM,0}(x) f_{Mc}(x) = \sum_{x\in X} \left[\ln p_c(x)\right] f_{Mc}(x) + US_{Mc,NM} = \tag{3.11}$$

$$PR_{M,c} + US_{Mc,NM}$$

Notice that the term $\ln w_{cM}(x)$ is the wage earned in country $c$ by Romanian immigrants of skill $x$. Using the individual wage definition in (3.1), the difference in the wage of an individual with characteristic $x$ earned at home 0 or abroad $c$ is the sum of the individual location (migration) premium $\ln p_c(x)$ weighted by the frequency of Romanian migrants to country $c$ plus the unobserved selection of migrants to country $c$, $US_{Mc,NM}$. Given the lack of information on $US_{Mc,NM}$ we will consider it as relatively small, vis-a-vis $PR_{M,c}$ so that we can neglect it and the expression 3.11 will be considered as identifying the average migration premium.

### 3.3.5 Skill premium and skill selection

Above we defined some aggregate statistics to capture the selection and the premium for migrants and returnees. Being based on the partition of the population into cells $x \in X$, this method defines also the selection and the premium for each value $x$. Even more conveniently, as the function $\ln \widehat{w}(x)$ transforms the multidimensional set of characteristics $X$ into a unidimensional skill, $\ln w$, we can invert the mapping $(x^{-1}(\ln w))$ and define selection and premia for each level of the skill variable $\ln w$. In particular, using the notation introduced in section 3.3.4, the selection of migrants relative to non-migrants is measured as a function of the wage level by the relative density: $(f_{Mc}(x^{-1}(\ln w)/f_{NM}(x^{-1}(\ln w))$. For instance, a value of this relative frequency for a cell equal to 1.3 implies that in this cell people are 30% more

likely to migrate relative to staying, than in the average cell. A value of 1 implies that in the cell people have the average probability of migrating to $c$. Similarly, the selection of returnees relative to non-migrants over the skill spectrum $\ln w$ is given by: $(f_R(x^{-1}(\ln w)/f_{NM}(x^{-1}(\ln w))$. The logarithmic premium for migrants at each level of skill can be written as: $PR_{Mc}(x^{-1}(\ln w)) = \ln w_{cM} - \ln w_{NM}$ and, similarly, $PR_{R0}(x^{-1}(\ln w)) = \ln w_R - \ln w_{NM}$ where the wage differences are taken for workers of the same skill $x$.

The representation of selection (relative frequency) as a function of skills is helpful to illustrate the whole profile (estimated kernel density) of each group (non-migrants, migrants and returnees). Similarly, the characterization of the premia as a function of skills $\ln w$ allows us to analyze more systematically how they are related.

In a very simple theory of migration, however, it is also useful to consider each skill cell $x \in X$ as an observation on a group of workers (whose number is equal to population in the cell) who have specific characteristics. Assuming each group as having a random distribution of migration costs to each country and a common return from migration to country $c$ which is given by the common linear premium $LPR_{Mc}(x) = w_{cM}(x) - w_{NM}(x)$ under general assumptions on the distribution of costs, the odds of migrating to that country relative to not migrating are an increasing function of the linear premium. Allowing for a measurement error $u(x)$ in the relative frequencies, this can be approximated by the following linear relation:

$$f_{Mc}(x)/f_{NM}(x) = a(x) + b * LPR_{Mc}(x) + u(x) \text{ for } x \in X \tag{3.12}$$

The relative selection in group $x$ indicates by how much the migrants are over (>1) or under (<1) represented in that skill group relative to non-migrants. Two qualifications are needed. First, under the assumption of idiosyncratic costs distributed as an extreme value Gumbull distribution the standard utility maximization in the Logit model implies that there is a linear relation between log odds and wage differentials (see for instance Ortega and Peri 2009). Expression (3.12) is simply a linear approximation of that exact equation. Second, the coefficient $b$ captures whether the selection, consistently with utility maximization, would be increasing in the linear returns to migration. The term $a(x)$ introduces the possibility that the selection is affected also by migration costs that are systematically different by skill group. Regression (3.12) will be estimated for each country of destination to see if the implication that $b > 0$, derived from a model of rational migration, is supported in the data. In testing the equation for each country of destination we are assuming independence from irrelevant alternatives. Similarly, as we have an independent measure of the return premium $LPR_R(x) = w_R(x) - w_{NM}(x)$ for each skill group, we can test whether the data support a theory of return motivated by economic benefits. We will run the regression:

$$f_R(x)/f_{NM}(x) = \alpha(x) + \beta * LPR_R(x) + v(x) \text{ for } x \in X \quad (3.13)$$

and test for $\beta > 0$. People need not return to a wage equal to that of similar non-migrants. In this perspective migration and return can be the optimal choice, even with no uncertainty (or unexpected shocks) for some people, as we will see in section 3.6.

## 3.4 Evidence on selection and premia

To analyse the evidence on selection and premia for Romanian individuals in the year 2003, we first show some simple graphs of selection for migrants and returnees over education and age. We will then present the values of the average skill selection on observables as well as the whole distribution of skills for migrants and returnees relative to non-migrants. Finally, we will show the average migration and return premium and their distribution by skill for migrants and returnees.

### 3.4.1 Simple selection on education and age

Figures 3.1-3 in this chapter present in a very simple form some evidence on the selection of returnees and migrants to each of the three destination countries over education and age groups. We already saw in figure 3.1 the trend in education levels of Romanian migrants to main destinations over 1995-2001. The US, Austria and Spain were typical destination countries for migrants of high, medium and low education levels, respectively, over the whole period.

In Figure 3.2, each panel shows the distribution of non-migrants and one other group (in turn returnees and migrants) in the form of histograms over four education groups (no degree, primary, secondary and tertiary). The wider bars represent the distribution of non-migrants, always the comparison group, and the thinner ones the distribution of the other group. Figure 3 does the same for the distribution across age groups. In both Figures 3.2 and 3.3, Panel 1 reports the comparison with returnees, Panel 2 with migrants to the US, Panel 3 with migrants to Austria and Panel 4 with migrants to Spain. In each panel the distribution, which is relative to working individuals (male and female), has been constructed using census data. Some tendencies are clear from these figures and anticipate some of the regularities that we will unveil later. First, returnees are clearly positively selected among education groups vis-a-vis non-migrants. Their relative distribution is much more skewed towards workers with tertiary education at the expenses of workers in any other education group

In terms of age, returnees are much less differentiated from non-migrants, however they tend to be slightly over-represented among groups with intermediate and old age

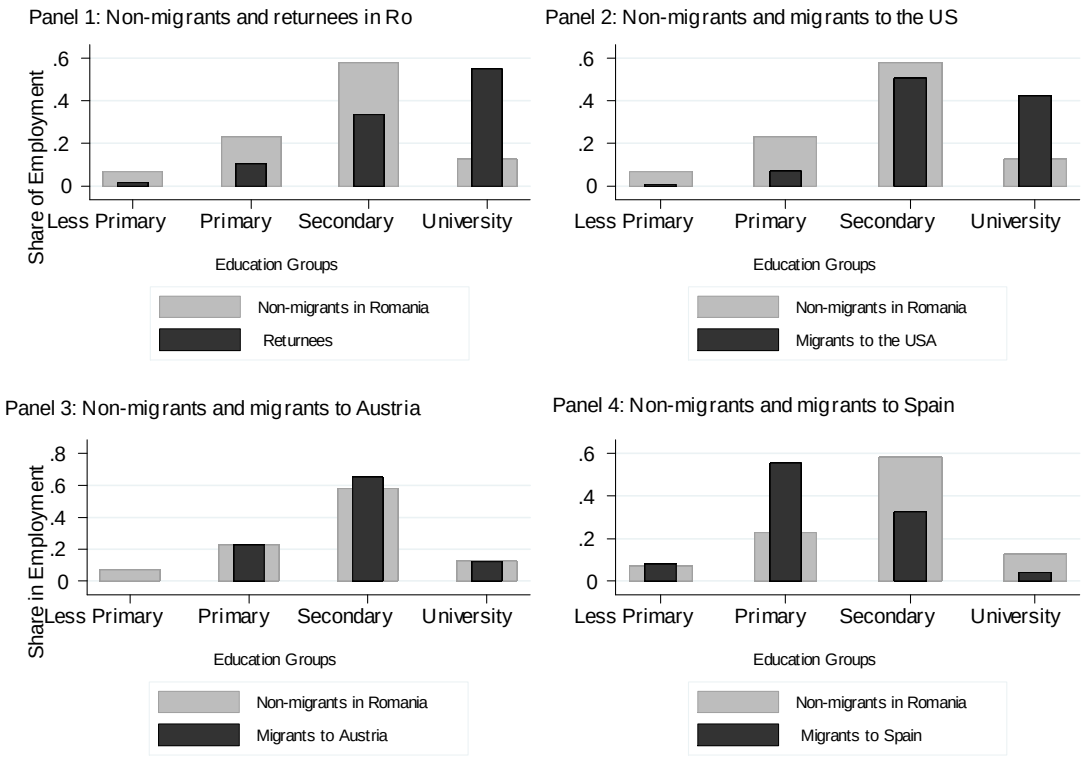



Figure 3.2: Selection over education

rather than among young workers (below 25). Migrants to the US tend to be better educated as well as older relative to non-movers. Both features may add to their earning abilities. The largest share of migrants to the US is among workers with secondary schooling and above, and they are significantly over-represented among workers older than 50. Migrants to Austria seem the group with the more "average" selection relative to non-movers. Their education distribution is not very different from that of non-movers (except for a slightly larger share of secondary educated and a smaller share of those with no degree). The age distribution is only slightly more concentrated in the group 30 to 50 relative to non-migrants. Finally, migrants to Spain show a clear negative selection, being much more concentrated than non-migrants among workers with only a primary degree (across education groups). Also, they are over-represented in the groups of less than 30 years of age (among age groups).

To summarize, the observable features of returnees look similar to those of migrants to the US, who show the strongest educational distribution. Migrants to Austria, on the other hand, are the most similar to non-movers and show a concentration in intermediate education and age groups. Finally, migrants to Spain seem the group with lowest earning potential skills, as they are concentrated among low education and young age groups. We will test more formally in the next section

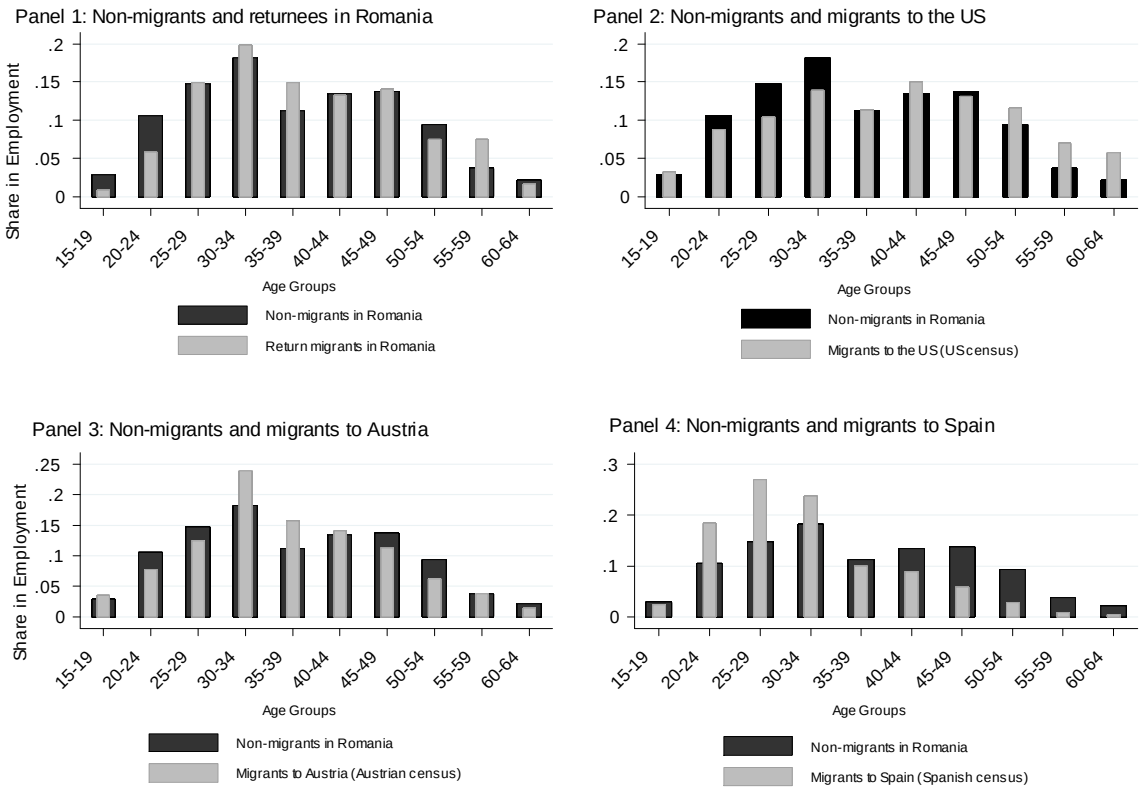



Figure 3.3: Selection over age

whether these stylized facts match the more structural measures of average selection.

### 3.4.2 Selection on observable wage-earning skills

Table 3.3 shows the values of the average skill selection of returnees and migrants to the US, Austria and Spain relative to non-migrants. The entries in Column (1) of Table 3.3 are (respectively from the first to the last row) the statistics $OS_{R,NM}$, $OS_{MUS,NM}$, $OS_{MAut,NM}$, $OS_{MSpa,NM}$ defined as in section 3.3.2. In column (1) we construct the frequencies for the group of non-migrants $f_{NM}(x)$ using the Census 2002 data. In column (2) we evaluate the same statistics when the frequencies $f_{NM}(x)$ are measured using the NDS 2003. Column (3) shows the average selection statistics obtained when we correct for participation in the destination country using the observed participation in Romania. Column (4) shows the statistics obtained using only employment and wages of male workers. Column (5) removes from the Romanian sample the ethnic minorities (Roma, Hungarian) who may be significantly different in their wage earning ability from the ethnic Romanian. The values can be interpreted as percentage differences in the average wage earning skill of the group and the average wage-earning skills of non-migrants.

| | (1) Average selection on observable skills Census 2002 | (2) Average selection on skills NDS 2003 | (3) Average selection correcting for participation Census 2002 | (4) Average selection of men Census 2002 | (5) Average selection on observable wage-earning abilities (no ethnic minorities) |
|---|---|---|---|---|---|
| Returnees | +0.14 | +0.12 | +0.13 | +0.13 | +0.14 |
| Migrants to US | +0.16 | +0.13 | +0.20 | +0.14 | +0.15 |
| Migrants to Austria | +0.03 | +0.01 | +0.04 | +0.03 | +0.02 |
| Migrants to Spain | -0.11 | -0.13 | -0.07 | -0.13 | -0.10 |

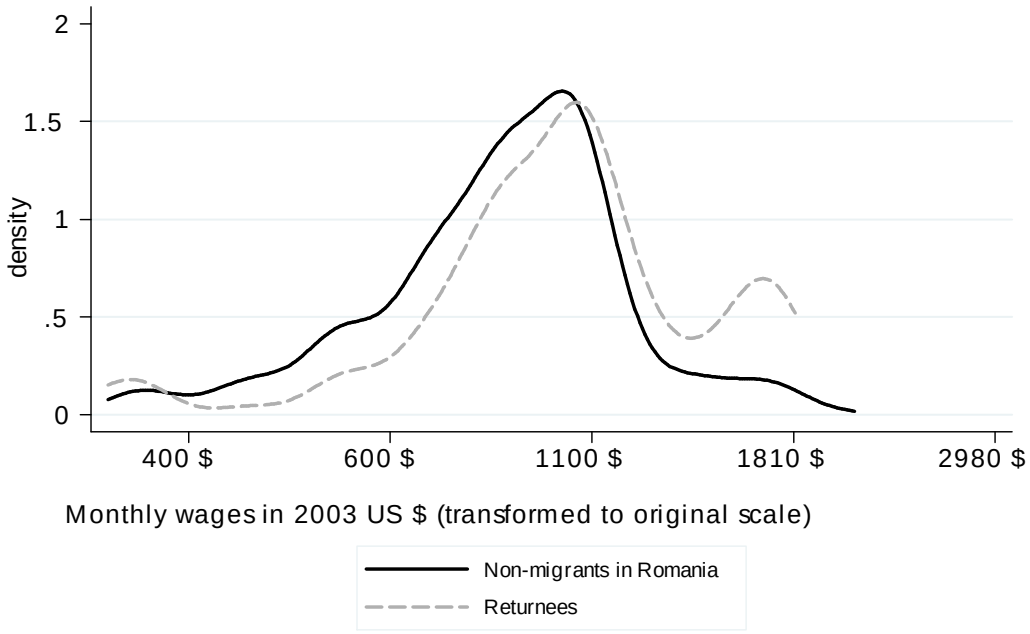
Note: The calculation of Average selection on Observable Skills follows the formulas in section 3.3.2 of the text Column (1) uses the employment data by skill cell from the Romanian Census 2002, Column (2) uses the employment data from the National Demographic survey 2003, Column (3) corrects for participation in Romania; Column (4) includes only male individuals. Specification (5) excludes the Roma ethnic group.

Table 3.3: Average selection on observable skills

The statistics obtained using different methods and samples show only rather small variation. This reinforces the idea that the features of selection that we found are quite robust and stable. First, the group of returnees exhibits a positive average selection between 12 and 14%. This means that when compared to non-movers, returnees have observable skills that allows them to earn domestic (monthly) wages higher by 12-14%. This is a significant positive selection. To give some point of comparison, the Mincerian returns to schooling that we estimated on the Romanian NDS data give a return of around 0.06-0.07 per year of schooling. Hence, the average difference in skills between non-migrants and returnees is equivalent to 2 years of schooling. This value is not very sensitive to the corrections. Importantly, the number obtained when using the NDS employment data and the number obtained when using employment from the Census are very similar, implying that as far as the selection of returnees is concerned the two data sets produce compatible results.

Moving to the average selection of migrants to the US we also find a large and economically significant positive selection ranging between 0.13 and 0.20. The only correction that makes some difference is the one for participation which actually increases the selection, implying that the selection of individuals who migrate to the US is even more positive that the selection of working individuals. This may be due to a lower participation of more educated women to employment in the US if they move e.g. with their highly educated working husband. Again, the pure skill selection among these migrants makes them equivalent to workers with 2-3 more years of schooling than the average non-migrant. Confirming the first impression from the education and age data, the selection of migrants to Austria is essentially zero. The statistic is small implying at most a 2-3% positive selection. Migrants to Austria are selected in a way that is not much correlated with their wage-earning skills. Correcting for participation in Romania and using the NDS rather than the Census data to construct employment frequencies does not make much difference. Finally, the migrants to Spain exhibit indeed a significant negative selection. Confirming the evidence from the education and age data, their average skill selection ranges from -0.07 to -0.13. Using participation rates in Romania (column 3) reduces slightly the negative selection, which implies that Romanian migrants to Spain also have lower employment participation in higher skill groups. Migrants to Spain have skills equivalent to one to two fewer years of schooling relative to Romanian non-migrants.

The average values of the selection variable conceal a whole distribution of skills for each group relative to non-migrants. Figures 3.4 and 3.5 show the comparison for the whole density distribution of non-migrants and other groups. Figure 3.4 shows the comparison between non-migrants and returnees. We show the distribution of the two groups by skill (logarithmic monthly wages). Two differences are clear even to a cursory visual inspection. First, the density of returnees is consistently lower

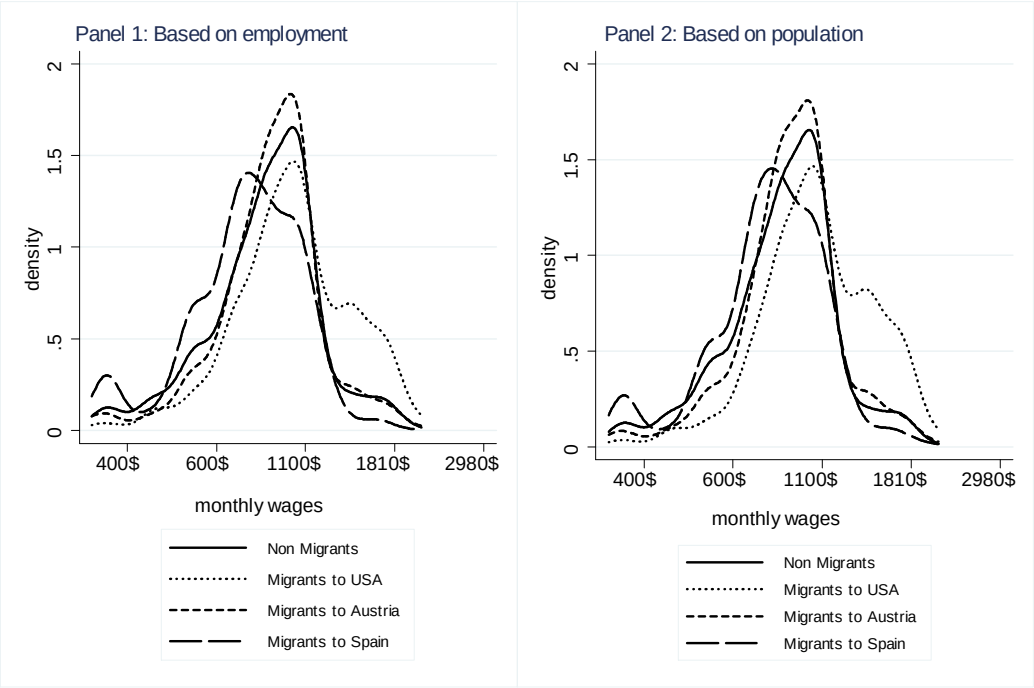



Note: The function represents the density of each population over the wage-earning skill distribution estimated using a Gaussian kernel. Bandwith is chosen optimally, for each distribution, following Fernandez-Heurtas (2008).

Figure 3.4: Kernel density over earning skills

in the skill range corresponding to 400$ to 1000$ (monthly). On the other hand, the density of returnees is larger for wages above 1000$ and has a particular peak of density around 1600$. These workers are likely to be the college educated in some intermediate age groups. Overall we can reject the hypothesis that the two distributions are equal by doing a Kolmogorov-Smirnov test, which rejects equality at 0.1% significance.

Figure 3.5 shows the kernel density estimator for non-migrants and migrants in each of the three destinations using both employment distribution by skill (Panel 1) and population distribution (Panel 2). The solid line represents non-migrants, the short dashed line is for migrants to Austria, the long dashed line for migrants to Spain and the dotted line for migrants to the US. As expected, relative to the non-migrants the distribution of migrants to Spain shows a significant density mass below the average skill level of non-migrants (about 882$) with a peak near 700$. On the other hand the distribution of migrants to the US shows a significant mass of density above the average of non-migrants reaching high and very high wages (up to 1800$). The density of migrants to Austria is not too different from that of non-migrants. A Kolmogorov-Smirnov test of distributional equality between non-movers and migrants to Austria cannot reject the null at 5% confidence.




Note: The functions represent the wage-earning skill (log wage) distribution estimated using a Gausian kernel. Bandwith is chosen optimally for each distribution, following Fernandez-Heuertas (2008).

Figure 3.5: Kernel density of migrants and non-migrants over skill, Census 2002

Overall the average skill selection on observables ranges from -13% for migrants to Spain to +20% for migrants to the US averaging around 0 for migrants to Austria. There could also be selection on unobservables. Our results on returnees indicate that they may be negatively selected on unobservables. Any estimate of a return premium based on observables would, therefore, represent a lower bound of the true return premium. Regarding migrants, Fernandez-Huertas Moraga (2011) estimates negative selection for migrants from Mexico to the US and reports that selection on unobservables is also negative and about 30% of the one on observables. Kaestner and Malamud (2010) do not find any significant selection either on observables or on unobservables for the same Mexican migrants to the US. Clemens et al. (2008) report a selection on unobservables for migrants from the Philippines equal to 8% and for South Africa they report an even more positive selection on unobservables (around 20%). The few other estimates available are for much poorer countries. In general, previous studies have either found an average selection on unobservables of the same sign as the selection of observables but much smaller or no selection at all. With this caveat in mind, we interpret the average observed selection as a correct measure of the skill selection of migrants and a possibly upward biased measure of the skill selection of returnees and proceed to identify the migration and return premium.

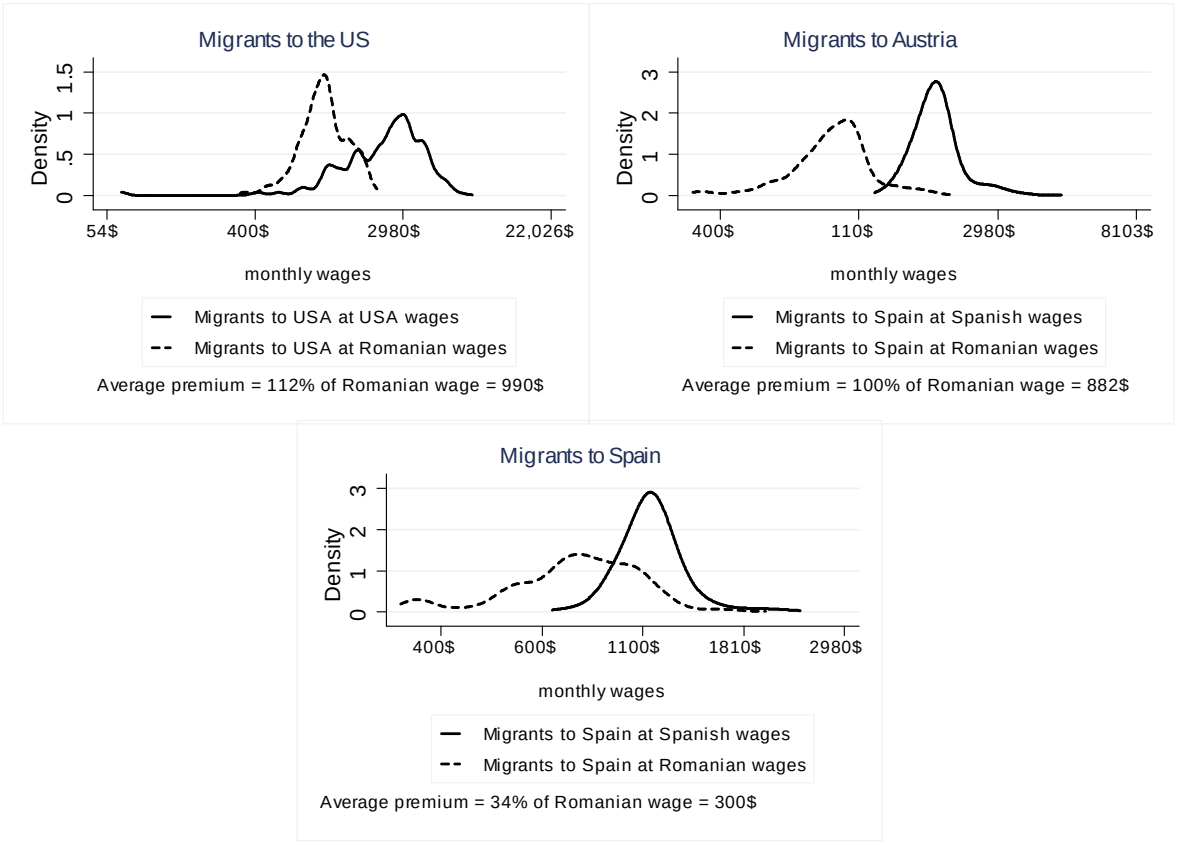



Figure 3.6: Wages in the destination country and counterfactual wages in Romania

### 3.4.3 Migration and return premium

The largest economic benefit of international migration is in form of a "migration premium" for migrants. Individuals with given skill characteristics increase substantially their wage and income by moving to countries where their skills are paid much more. The average wage premium for migrants varies across countries of destination, but so does the skill-profile of migrants, which depends on how the labour market at destination prices their skills. In general, for a given average wage differential, the influential Roy (1951) model (applied for instance in Borjas 1987 and Borjas and Bratsberg 1996) implies that countries with large skill compensation (namely larger than in the country of origin) attract more skilled workers. Those countries typically exhibit larger wage inequality driven by skill differences. To the contrary, given average wage differentials, countries with low skill compensation (lower than in the country of origin) would attract instead less skilled workers. Such differential behavior essentially depends on the fact that in the first case the migration premium is increasing, while in the second case it is decreasing with skills.

A simple way of characterizing such migration premia across skills is to report the distribution of the log wages earned by migrants abroad and those they would

receive at home. We impute these distributions using the predicted values from a regression of log earnings on education, age, gender and family size.. Averaging those two distribution using the density of skills of migrants and taking their difference would generate the average migration premium. The distributions of wages in the country of emigration together with what those individuals would earn in Romania is shown in Figure 3.6. The difference in the average skills between the two distributions represents the average migration premium and is reported in 2003 US$ below each panel. Panel 1 reports the wage distribution for migrants in the US and their counter-factual distribution had they worked in Romania. Panel 2 shows the same comparison for migrants to Austria and Panel 3 for migrants to Spain. Two regularities are apparent. First, relative to their wage distribution in Romania, migrants have a wider wage dispersion in the US, an intermediate one in Austria and the smallest one in Spain (smaller than in Romania). This is an indication that returns to skills are highest in the US and lowest in Spain. Second, while significant in each case, the average migration premium is much more substantial for migrants to the US (990$ per month) than for migrants to Spain (300$ per month). This is consistent with the large migration flows to the US, and it partly compensates for the large costs of migration. More interestingly, however, is the fact that for migrants to Spain the figure suggests that the largest benefits would accrue to those who are likely to be in the long left tail of the counter-factual Romanian wage distribution (hence the low skilled). To the contrary, for the migrants to the US, the more likely to gain are those from the right tail of the wage distribution. A more systematic analysis of premium and skills is needed here, although the simple wage distribution already indicates the main driver of migration incentives between these countries.

## 3.5 Migration and return driven by skill-specific premia

In this section we analyze whether differential migration rates to specific countries (or return rates) across skill cells are consistent with a rational response to wage premia. Table 3.4 shows the estimates of coefficients $b$ and $\beta$ from equations (3.12) and (3.13) in its first three rows. A positive value of the estimated coefficient implies that that migrants and returnees respond to larger premium by migrating (returning) in larger shares proving the rationality of their behavior.

| Dependent Variable | | (1) Relative frequency of return migration | (2) Relative frequency of migration to US | (3) Relative frequency of migration to Austria | (4) Relative frequency of migration to Spain |
|---|---|---|---|---|---|
| Explanatory | | | | | |
| Monthly wage Premium | in population cells | 0.38** (0.05) | 0.24** (0.01) | 0.30** (0.02) | 0.63** (0.04) |
| Monthly wage Premium | in employment cells | 0.21** (0.02) | 0.27** (0.03) | 0.18** (0.03) | 0.27** (0.05) |
| Monthly wage Premium | controlling for age and family effects | 0.11** (0.02) | 0.33** (0.02) | 0.15** (0.03) | 0.01 (0.02) |
| Does it support the selection by premium theory? | | Yes | Yes | Yes | Yes in part |

*Note*: Column (1) shows the estimate of $\beta$ in regression (3.13). Columns (2)-(4) show the estimates of $b$ in regression (3.12). The units of observation in each regression are the 320 education-age-gender-family status cells. The explanatory variable is the difference between the wage of a returnee (migrant) and that of a non-mover in the same skill cell expressed in thousands of 2003$ Method of estimates is weighted LS, with weights equal to the non-migrant population in the cell.

Table 3.4: Migration and return premium

Each cell in Table 3.4 corresponds to the estimates of the parameter $\beta$ (column 1) or $b$ (columns 2, 3 and 4) from a different regression. In the first row we measure migration and return rates including total population in the cells, in the second row including only workers in each cell. In the third row we include in regressions (3.12) and (3.13) dummies to control for age groups and for family type (married or not and with children or not) meant to capture differential migration and return costs for individuals of different age groups and different family structure. Young, unmarried individuals with no children are the most mobile, hence one can expect that in these groups we observe the most migrants and returnees beyond the effects of a wage premium. This would be due to a systematic difference in costs rather than in the return to migration. The estimated $b$ and $\beta$ coefficients are positive and significant in 11 cases out of 12. Their values range between 0.1 and 0.6 with most estimates between 0.2 and 0.4. Taking 0.25 as the median estimate, this coefficient implies that an increase in the migration premium for a skill group by 1,000$ per month would increase the frequency of migrants relative to non-migrants in that skill group by 25%. The stability of the coefficient across countries and even between migrants and returnees implies that we can think of a common explanation for the skill selection of migrants and returnees, namely their response to the wage premium, i.e. to economic incentives. The different skill composition of migration to different countries and the skills of returnees can, therefore, be explained simply by the common tendency to migrate where and to return when the premium is larger. This common response to incentives is consistent with a positive skill-selection for returnees and migrants to the US (where premia are higher for highly skilled), with a negative selection for migrants to Spain (where premia are higher for less skilled), but also with the random selection of migrants to Austria. These migrants too respond to wage premia, only those premia do not have a clear correlation with skills.

## 3.6 Long-run simulated effects on wages and schooling

The empirical analysis implies that return migrants to Romania are positively selected on observable characteristics relative to non-migrants. As their positive selection is similar to the selection of migrants to the US, which are among the most skilled of migrants, returnees are likely to be positively selected also among migrants overall. It also shows that returnees earn wages significantly higher than non-migrants and this difference increases with their skills. Interpreting the wage premium as a productivity difference due to skills accumulated abroad, there are two potentially important effects of migration and return for the sending country. First, this process may increase the expected overall returns to skills, possibly inducing the positive

brain gain incentives emphasized by Docquier and Rapoport (2008). Second, it may increase the productivity of returnees (who have learned new skills and enhanced their human capital) with positive effects for the domestic economy.

In this section we use the simulation results of the model developed in Mayr and Peri (2009) to summarise the long run implications of emigration and return on average years of schooling and wages in Romania. We also use the results from Ambrosisni et al. (2015) to look at the effects of relaxing migration constraints for Romanian workers post EU enlargement.

Mayr and Peri (2009) identify the selection of migrants and returnees, in terms of their schooling (and an underlying skill parameter). Their model produces some "threshold" skill levels for emigration and return. Like in Docquier and Rapoport (2008), the returns to migrating are higher for the highly educated if the return to education abroad is sufficiently large compared to the return to education at home. All workers with skills above a given threshold will opt to emigrate and only a fraction $p$ of them will succeed. But if the return premium is sufficiently large, then the returns to returning are even higher for the highly educated. Therefore the most educated of all choose to migrate and return. In particular, there will be a higher schooling threshold above which all individuals, if they migrated in the first period, would return in the second period. Those with intermediate schooling (between the two thresholds) choose to migrate and stay abroad (if they succeed to migrate), and the least educated (below the lowest threshold) stay at home. The model has one important implication. If the probability of migrating $p$ increases under positive skill selection of migrants (as observed), more intermediate and highly skilled will migrate. However, two effects may balance this brain drain. First, as education is a choice, more individuals will choose higher education as the expected returns to schooling increase. A higher probability to migrate (and return) increases the expected returns to education and induces more individuals to get higher education.[6] Second, more migrants means more returnees and each one of them will benefit from the extra-productivity (wage) effect due to the accumulated skills abroad. These two positive effects on skills and wages can offset the negative effect of a positive selection of migrants.

Our results complement other empirical findings on the effects of labour supply shocks in countries of origin in Eastern Europe. Dustmann et al. (2012) find a positive effect of emigration from Poland on Polish wages. For the case of Lithuania, where the rate of emigration following the EU-enlargement was similar to that from Romania (around 9%), Elsner (2013) finds that emigration increased the wages of young non-migrant workers by 6%, while it had no effect on the wages of old workers

[6]The response of education depends on the assumed costs of education and distribution of skills that we set to match the initial distribution of Romanian population by schooling level (from the Barro-Lee 2000 data).

who stayed in the home country.

Table 3.5 from Ambrosini et al. (2015) provides the simulated effects of emigration and return on average years of schooling and wages in Romania, using parameters and averages calculated for Romania. The parameters for the returns to schooling at home and abroad are estimated using a Mincerian equation for Romania (around 0.06) and for the average European country (around 0.08). The return premium is chosen to match the return premium obtained by college educated returnees in section 3.4.3 (around 28% above non-migrants). The wages for no schooling are set at the level observed from our Romanian data and the average of the three migration countries. The migration and return costs are set to match the share of returnees in total (always measured to be around 0.4-0.5).[7] It shows that the relaxation of migration constraints increases average schooling and wages in Romania (i.e., the net effect of emigration is positive). The table also distinguishes between the net effects by education and age, and shows that the highly educated in their second period of life benefit the most.

The Mayr and Peri (2009) model and the simulation results from Ambrosini et al. (2015) provide also the possible implications of changes in migration policy regimes for migration, return and wages in Romania.

They imply that a decrease in the migration costs related to residing abroad (e.g. due to reducing transportation and communication costs or a better integration of the labour markets) imply higher migration flows, lower return flows and also stronger incentives to invest in schooling. Based on the Mayr and Peri (2009) model, and using the results presented in this chapter, Ambrosini et al. (2015) find that a 20 per cent rise in migration costs from Romania would decrease average wages and average years of schooling in Romania by 1 per cent.

[7]The other parameters of the model are kept as in Mayr and Peri (2009) to match an average Eastern European country.

| | probability of migration (p) | | | | | | |
|---|---|---|---|---|---|---|---|
| | **0** | **0.05** | **0.1** | **0.15** | **0.2** | **0.25** | **0.3** |
| | | | | **Years of Schooling** | | | |
| Average schooling: young | 12 | 12.16 | 12.33 | 12.49 | 12.64 | 12.78 | 12.91 |
| Average schooling: old | 12 | 12.32 | 12.66 | 13.01 | 13.37 | 13.75 | 14.15 |
| Average schooling: overall | 12 | 12.24 | 12.50 | 12.76 | 13.03 | 13.30 | 13.59 |
| | **Wages (standardized to 1 with no migration)** | | | | | | |
| Average wages: young | 1 | 1.01 | 1.02 | 1.04 | 1.05 | 1.07 | 1.08 |
| Average wages: old | 1 | 1.04 | 1.09 | 1.15 | 1.22 | 1.29 | 1.36 |
| Average wages: overall | 1 | 1.03 | 1.06 | 1.10 | 1.14 | 1.18 | 1.23 |
| Average wage: no primary | 0.47 | 0.47 | 0.47 | 0.47 | 0.47 | 0.47 | 0.47 |
| Average wage: primary/secondary | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 |
| Average wage: tertiary-young | 1.41 | 1.43 | 1.45 | 1.48 | 1.50 | 1.52 | 1.55 |
| Average wage: tertiary-old | 1.41 | 1.48 | 1.56 | 1.64 | 1.73 | 1.82 | 1.92 |
| | | | | **Migration Rates** | | | |
| Share of emigrants | 0 | 0.045 | 0.091 | 0.137 | 0.183 | 0.230 | 0.276 |
| Share of returnees emigrants | 0 | 0.471 | 0.482 | 0.492 | 0.502 | 0.512 | 0.521 |

*Note:* All wage rates standardised relative to the average wage with no emigration.
The simulation follows Mayr and Peri (2009).
More details on the model are provided in Ambrosini et al. (2012).

Table 3.5: Simulated effects of increased migration

They also find that an increase in the wage premium for highly educated Romanians who move abroad would generate two opposite effects. Since emigrants have larger expected returns to skills in the receiving country, there will stronger education incentives in Romania which will increase average schooling for younger generations. But since fewer migrants would return the schooling level of older generation in Romania decreases. Ambrosini et al. (2015) find that for an increase in the returns to schooling from 8% to 8.3% in the receiving country, the two effects will produce a 2% wage and schooling increase in Romania due to higher education of the young.

Amborisini et al. (2015) find also the effect fiscal incentive for highly skilled returnees. For a fiscal incentive that increases by 30% the premium of returnees, proportionally to their schooling, the percentage of returnees would double. This incentives to train, migrate and return would increase the share of those investing in higher education - which in turn increases average wages by 1-2 per cent.

## 3.7 Conclusions

Return migration is an important compensation mechanism for the potentially negative effects of the large labour outflows experienced by many East European countries around the year 2000. Recently re-evaluated evidence on the magnitude of return migration during the age of mass migration (Bandeira et al. 2013) reinforces the importance of return flows for the economic convergence between sending and destination countries. This sheds new light on the likely benefits that accrue to sending countries if migrants return with foreign qualifications, occupational skills, financial capital and attitudes which contribute to economic and institutional development.

However, these beneficial effects of temporary migration will depend crucially on the nature of selection into migration and return.

The novelty of our study lies in uncovering the magnitude and the selection of migration and return flows for the case of Romania. We use these estimates in a model of education and temporary migration to simulate the long-run effects of migration and return on the level of skills and wages.

Consistent with other finding in the literature, our results confirm the significance of return migration suggesting that, over less than a decade, about half of the people who migrate eventually return. Romanian return migrants are strongly positively selected on observables and negatively selected on unobserved characteristics, relative to non-migrants. In line with the qualitative evidence of previous sociological studies as well as with the predictions of standard economic theory, our microdata imply that the selection of migrants depends on the country of destination. It is positive for the US and negative for Spain. Moreover, Romanian returnees are selected in a similar way as migrants to the countries with the highest skill premium (i.e. the US)

and hence are positively selected among migrants overall. Both rounds of selection (first into migration and second into return) are consistent with the idea that workers move in accordance with the wage premium they receive. Decisions to return may therefore be part of an optimal strategy to maximize lifetime income.

In this chapter we also tried to assess the long-run implications of temporary migration for the sending country. Using the model introduced in Mayr and Peri (2009), we simulate the effects likely to occur due to the increased migration after the introduction of free movement of labour in the context of EU enlargement (for the case of Romania after 2007). Our results suggest that at the end of the migration cycle the large outflows of labour will be followed by significant flows of return migration. Despite the strong positive selection into the initial migration, our results imply an increase in average wages and levels of schooling in the Romanian population through incentives to invest in education and due to the enhanced wage-productivity of return migrants. Various economic and political developments in Europe are likely to mediate the impact of migration on CEE sending countries. However, over the long-run, an increase in labour mobility is likely to have a positive contribution of economic convergence via return migration.

# Chapter 4

# Labour market returns to return migration in Romania

In the previous chapter we analysed the selection of both migrants and returnees from Romania based on observable characteristics. Our aim was to outline potential implications of migration and return for wages and skills in the sending country. In this chapter we look in more detail at the labour market outcomes of migrants upon their return to Romania. We first compare wages for: non-migrants versus returnees, before migration versus upon return, work abroad versus study abroad. We then address the occupational choices of migrants upon return. Do returnees change their employment status after returning home compared to before they left? Are they likely to experience an upwards mobility in their jobs? Does their propensity to become (nascent) entrepreneurs increase upon return?

## 4.1 The selection problem(s)

We need to address two selection issues to estimate accurately the labour market returns to return migration. The first one arises due to the self-selective nature of migration: with regard to both observable and unobservable characteristics, migrants are not a random sample of the population. Migrants first self-select from the total population of the home country. This selection is based on both observable and unobservable characteristics. Upon return, migrants decide whether or not to work. Depending on their reservation wages returnees might choose e.g. not to participate in the labour market. This decision is in turn based on characteristics which can be either observed or unobserved in our data. Returnees can differ from non-migrants also in their labour market participation decisions.

The question of how migrants self-select from the population of the source country has been widely analysed in empirical studies (see e.g. Borjas 2014 for a survey). Some addressed specifically the emigration of immigrants (return or on-ward

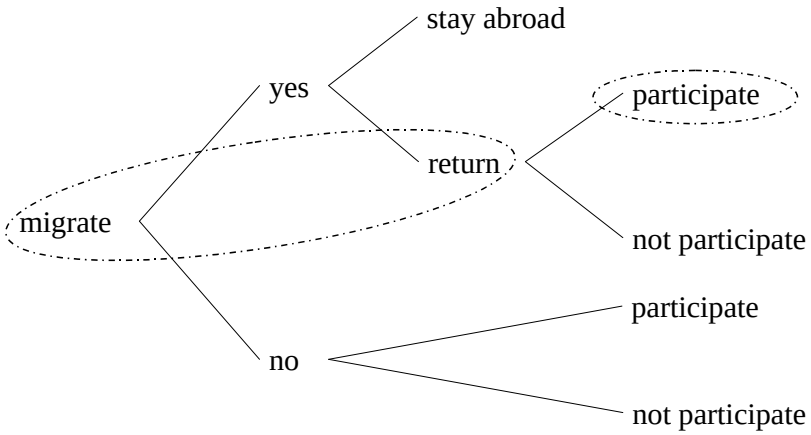



Figure 4.1: Decision tree for the labour market participation of return migrants (double selection)

migration) and showed that the estimates of labour market models are biased by non-random out-migration (see e.g. the survey article by Dustmann and Görlach 2015b and chapter 5 for more details).

From the perspective of the country of origin, an interpretation of the self-selection of returnees is not trivial. Since we observe migrants who return but not those who stay abroad we do not have enough information to infer separately the selection at the two stages. The selection of returnees from the population is different from the selection into the initial migration. Return migrants actually take two decisions (see figure 4.1): they decide whether to migrate or not and, while abroad (or already prior migration), they decide wether and when to return (or not). If returnees are e.g. a positively self-selected group from the total population, we cannot imply that only the best of the migrants also self-select into returning. Those who migrate can be initially positively selected from the total population while return migrants are randomly or even negatively selected from the pool of migrants abroad. Wahba (2015) is the only available study on return migration which accounts for the double selectivity in migration and return. She founds that migrants are positively selected relative to non-migrants, but returnees are negatively selected among migrants. In such a case, not accounting for both levels of selection would overestimate the impact of return migration on the wage premium of returnees. The selection into labour force participation is comparatively straightforward: it involves only one switching level for both returnees and non-migrants. While the decision tree in figure 4.1 reflects the choices of potential migrants and returnees, it does not reflect the structure of our observational data. We are unable to differentiate the migration and the return decisions of returnees since we do not observe migrants who do not return. The structure of the data is better reflected by a tree with only two levels instead of three - this is what we imply with the dashed lines circumscribing the migration/return

decision and the participation decision.

The challenge of our empirical analysis is precisely to find an identification strategy to deal with both selection problems. The decision to "be a returnee" (i.e. to migrate and then return) and the decision to participate in the labour force upon return are likely to be endogenous. Ignoring this leads to omitted variables bias. Our estimated wage equations would be inconsistent and the predicted causal effect of return migration on wages inaccurate. We can adjust for the selection bias in two ways: by treating it either as an endogeneity problem or as a sample selection problem. Choosing the appropriate model hinges on the way in which return migration is believed to affect wages upon return.

If we assume that work experience abroad has only an intercept effect on wages, i.e. merely a parallel shift of the wage profiles, we can deal with it as an endogeneity problem. This means that we treat the migration status as a right-hand-side variable and pool returnees and non-migrants together in a single wage equation of the type:

$$\ln y = \beta' X + \alpha \cdot D + \epsilon, \tag{4.1}$$

where $y$ are the earnings, $X$ a vector of personal characteristics and $D$ a dummy variable indicating the migration status. A significant $\alpha > 0$ means e.g. that return migration results in an upwards shift of the wage function for returnees. Under this model, the $\beta$s are restricted to be the same for returnees and for non-migrants. Since returnees are a self-selected group, estimating (4.1) by means of an OLS will produce inconsistent results. We can remove the omitted variable bias only if all variables which determine return and participation decisions and are correlated with wages are known, quantified and included in the regression. Co, Gang, and Yun (2000) treat return and participation decisions as endogenous to analyse the effect of return migration on wages in Hungary. The question in this case becomes: "Conditional on the individual characteristics ($X$), what is the mean effect on earnings of having had work experience abroad?". Co, Gang, and Yun (2000) correct the coefficients of (4.1) for the OVB induced jointly due to return migration and labour force participation.

Alternatively, we can treat the identification of the return migration premium as a sample selection problem. Return migration will not only have an intercept effect but also a slope effect. The returns to individual characteristics in the labour market are not the same for migrants and non-migrants. We therefore need two earnings functions, one for returnees:

$$\ln y_{mig} = \beta_{mig} X_{mig} + \varepsilon_{mig}, \tag{4.2}$$

where $X_{mig}$ refer to the characteristics of return migrants and $\beta_{mig}$ to the rewards to

this characteristics and a second one for non-migrants:

$$\ln y_{sed} = \beta_{sed} X_{sed} + \varepsilon_{sed}, \tag{4.3}$$

where $X_{sed}$ refer to the characteristics of non-migrants and $\beta_{sed}$ to the rewards to this characteristics. This method is applied by de Coulon and Piracha (2005) in their study on Albanian returnees. They assume that returnees and non-migrants obtain different returns to their individual characteristics.

We assume in our estimation that migration and return decisions follow a latent index function:

$$m_i^* = \gamma_i Z_i + u, \tag{4.4}$$

where $Z_i$ are characteristics of individual $i$ which influence his utility maximisation problem in the migration decision. The decision to participate follows:

$$p_i^* = \delta_j Q_j + v, \tag{4.5}$$

where $Q_j$ are characteristics of individual $j$ which determine his reservation wage. The individual will migrate only if his net gain in utility from moving is positive ($m_i^* \geq 0$). The individual will participate in the labour force if the market wage will exceed his reservation wage ($p_i^* \geq 0$). However, $m_i^*$ and $p_i^*$ are not observed in our data. We use two dummy variables available in the survey for the migration status:

$$m_i = (\gamma_i Z_i + u > 0) = \begin{cases} 1 & \text{for returnees, i.e. : } m_i^* \geq 0 \\ 0 & \text{for non-migrants, i.e. : } m_i^* < 0 \end{cases}, \tag{4.6}$$

and for the participation in the larbour force:

$$p_i = (\delta_j Q_j + v > 0) = \begin{cases} 1 & \text{for participants, i.e. : } p_i^* \geq 0 \\ 0 & \text{for non-participants, i.e. : } p_i^* < 0 \end{cases}. \tag{4.7}$$

There are four possible outcomes of the decision process: (1) the individual decides to migrate and to participate in the labour market (i.e. $p_i = 1$, $m_i = 1$), (2) the individual decides not to migrate but to participate (i.e. $p_i = 1$, $m_i = 0$), (3) the individual decides to migrate but not to participate in the labour market upon return (i.e. $p_i = 0$, $m_i = 1$), and (4) the individual decides not to migrate and also not to participate in the labour market (i.e. $p_i = 0$, $m_i = 0$). The last two outcomes are not distinguishable in terms of wages since the (log) wage of an individual $i$ is determined

by:

$$y^* = \begin{cases} \ln y_{mig} & \text{for returnees, i.e. : } \; p_i = 1, \;\; m_i = 1 \\ \ln y_{sed} & \text{for non-migrants, i.e. : } \; p_i = 1, \;\; m_i = 0 \\ \text{not observed} & \text{for non-participants, i.e. : } \; p_i = 0, \;\; \forall \; m_i. \end{cases} \tag{4.8}$$

The two selection rules, migration ($m_i^*$) and participation ($p_i^*$), are not independent. We allow the two to be correlated: $corr(u, v) = \rho \neq 0$, where the two error terms of (4.4) and(4.5) are: $u, v \sim N(0, 1)$.

The conditional distributions of the error terms in equations (4.2/4.3),(4.4), and(4.5) for the entire population is $(u, v, \varepsilon) \sim N(0, \Sigma)$. We assume a joint multinormal distribution, and the variance-covariance matrix of the error terms will be:

$$\Sigma = Cov(\varepsilon, u, v) = \begin{bmatrix} \sigma_u^2 & \sigma_{uv} & \sigma_{u\varepsilon} \\ & \sigma_v^2 & \sigma_{v\varepsilon} \\ & & \sigma_\varepsilon^2 \end{bmatrix}. \tag{4.9}$$

We correct the predicted wages jointly for the two rules. Since wages are observed only for those participating in the labour market, the conditional mean of the error term in the wage equation for the selected sample will not be zero, i.e. $E(\varepsilon \mid p) \neq 0$. The selection rules are correlated, i.e. $corr(u, v) = \rho \neq 0$. Like in Co, Gang and Yun (2000), $\sigma_u^2$ and $\sigma_v^2$ are normalised to 1.The adjusted wages for returnees will be given by:

$$\widehat{w}_{mig} = E(\ln y_{mig} \mid m_i = 1) = \beta_{mig} X_{mig} + \sigma_{\varepsilon_{mig}} \rho_{\varepsilon_{mig} u} \frac{\phi(\gamma_i Z_i)}{\Phi(\gamma_i Z_i)}, \tag{4.10}$$

and those of the non-migrants by:

$$\widehat{w}_{sed} = E(\ln y_{sed} \mid m_i = 0) = \beta_{sed} X_{sed} + \sigma_{\varepsilon_{sed}} \rho_{\varepsilon_{sed} u} \left[ -\frac{\phi(\gamma_i Z_i)}{1 - \Phi(\gamma_i Z_i)} \right]. \tag{4.11}$$

In (4.10) and (4.11) $\sigma_{\varepsilon_{mig}}$ and $\sigma_{\varepsilon_{sed}}$ are the variances of the error terms from the wage equations of migrants and, respectively of stayers, $\rho_{\varepsilon_{mig} u}$ and $\rho_{\varepsilon_{sed} u}$ the correlations between the error terms of the migration decision and those of the wages for migrants and, respectively for stayers. $\phi(\gamma_i Z_i)$ and $\Phi(\gamma_i Z_i)$ are the standard normal density and, respectively, cumulative function.

We predict actual and counterfactual wages (like de Coulon and Piracha 2005) for both migrants and returnees. We apply the coefficients obtained for one group to the characteristics from the other group. Had returnees decided to stay and not to work abroad (and return), they would predictably obtain wages corresponding to their characteristics:

$$E(\ln y_{mig} \mid m_i = 0) = \widehat{\beta}_{sed} X_{mig} + \sigma_{\varepsilon_{mig}} \rho_{\varepsilon_{mig} u} \left[ -\frac{\phi(\gamma_i Z_i)}{1 - \Phi(\gamma_i Z_i)} \right]. \tag{4.12}$$

Had the non-migrants choose to work a certain period abroad and return, their wages would be given by:

$$E(\ln y_{sed} \mid m_i = 1) = \widehat{\beta}_{mig} X_{sed} + \sigma_{\varepsilon_{sed}} \rho_{\varepsilon_{sed} u} \frac{\phi(\gamma_i Z_i)}{\Phi(\gamma_i Z_i)} \tag{4.13}$$

in (4.12) $\sigma_{\varepsilon_{mig}}$ is the variance of the error term for the wage equation of migrants (4.2)and $\rho_{\varepsilon_{mig} u}$ is the correlation coefficient between the error terms of the migrants' wages and that of the migration decision rule (4.4). In (4.13) $\sigma_{\varepsilon_{stay}}$ is the variance of the error term in the wage equation estimated for stayers (4.3) and $\rho_{\varepsilon_{stay} u}$ is the correlation coefficient between the error terms of stayers' wages and that of the migration decision (4.4). In (4.12) and (4.13) $\phi(\gamma_i Z_i)$ and $\Phi(\gamma_i Z_i)$ are the standard normal density and, respectively, cumulative function.

We predict two types of income differentials. First, the overall sample selection adjusted income differentials between returnees and non-migrants is given by:

$$\Delta_{inc} = \widehat{w}_{mig} - \widehat{w}_{sed}. \tag{4.14}$$

Second, we also estimate the hypothetical wage differential between the actual and the counterfactual wages for individuals of the two groups. This differential will be imputed for non-migrants out of the difference between their counterfactual wages (had they decided to migrate and return) and their adjusted actual wages:

$$\Delta_{inc}^{hyp} = E(\ln y_{sed} \mid m_i = 1) - \widehat{w}_{sed}. \tag{4.15}$$

For returnees the hypothetical wage differential is the difference between their adjusted wages and their counterfactuals (had they decided to stay):

$$\Delta_{inc}^{hyp} = \widehat{w}_{mig} - E(\ln y_{mig} \mid m_i = 0). \tag{4.16}$$

We average (4.14) for specific groups of the population, like e.g. men / women, employee / self-employed, age, level of education, occupations. The hypothetical wage differentials predicted by (4.15) and (4.16) can be used to analyse selection patterns. Had they decided to migrate and return, would non-migrants be performing better than actual returnees do? Or would returnees perform better than stayers, had they decided to stay and not to migrate for work abroad?

## 4.2 Data and empirical strategy

### 4.2.1 Data sets and choice of the variables

We estimate the wage differentials described above using two data sets. The first one was already described in the chapter 3: the National Demographic Survey (NDS) collected by the Centre for Urban and Regional Sociology (CURS) in 2003. The second one is a survey carried out by the same institution in 2005 on a sample of 1,500 return migrants (from now on Returnees Survey). The migrants were interviewed in Romania upon their return from spells of work abroad. To assure regional representativity, they used a multiple-stage sampling procedure The sampling frame identified first the regions were migrants return to. Subsequently, repeated fieldwork was carried out in these regions to capture seasonal migrants. In both data sets, the definition used to identify return migrants was to have at least six months of work experience abroad after 1990.

The NDS contains variables depicting three types of information about return migration: (i) if the person has been working abroad, and how many trips for work abroad the person undertook after 1990, (ii) intentions to migrate again and if so, if permanent or temporary (an indication of circular or repeat migration for returnees), (iii) if the respondent studied or currently studies towards a degree abroad. We also have information about other members of the household currently working abroad, and if the household receives remittances. The survey contains battery of questions on the personal background of the respondent, as well as about the household. Some retrospective questions cover their occupational mobility, the internal migration, and changes in the employment status or job location of the individual over the last decade. It also includes information on parental background, i.e. parents education and occupation before 1989.

The Returnees Survey was designed specifically to capture information on the preferences and behaviour of return migrants. The questionnaire contains three sections: one covering the period before migration, the second covering the period spent abroad, and the third one asking questions about the experience in Romania upon return. The first section contains information on the whole employment biography prior to labour migration: labour force participation, employment status, occupation, sector of employment, monthly income, savings and disposable income as well as assets owned by the household. The section on work abroad distinguishes between the first movement abroad and the last or the present one - which is the case for circular migrants who are just visiting their home towns and were captured in the survey. The work experience abroad is covered both in terms of labour market performance and of elicit beliefs about new human capital acquired (e.g. foreign languages, occupational skills, formal certificates) or about the loss of skills (e.g. due to jobs

bellow their qualifications) while abroad. The information on employment abroad covers also the possibility of informal work and of moonlighting (i.e. having multiple jobs at the same time, of which some could be informal).

We restrict our sub-samples from the two surveys to respondents between 25 and 55 years of age to exclude students and migrants who return into retirement. This leaves us with about 25,000 full observations from the NDS and about 1,100 full observations from the Returnees Survey.

### 4.2.2 Descriptive statistics

Our estimated ratio of return migrants (persons who spent at least half a year working abroad) in the population is consistent with similar estimates from other data sets (2002-census and the BOP-Public Opinion Barometer, a popular yearly opinion poll in Romania). In both data sets the proportion of returnees in the working age population is about 5% (5.6% of the individuals included in the restricted sample of the NDS are return migrants). In the NDS the returnees appear to be younger than non-migrants (on average about 4 years), better educated (about one more year of schooling), and predominantly men (about 75% of returnees are male as compared to 45% among the non-migrants). Most of the descriptive statistics are consistent with theoretical predictions: the returnees are less likely to own land or to be home owners, are located in areas with high levels of emigration and a high prevalence rate of circular migration and, more often than not, come from urban areas. They do return to regions with lower levels of unemployment and slightly higher wages. Three time more households with a member who is a return migrant receive remittances from abroad, compared to households without returning members. About four times more returnees have relatives and friends abroad as compared to non-migrants.

Return migrants have a significantly higher propensity to migrate again for work abroad than non-migrants. This is true for intentions to migrate again on a temporary basis (circulate) as well as for plans to migrate on a permanent basis (emigrate). In the NDS survey, more than two times more non-migrants than returnees declare their intention to stay in Romania, while about three times more return migrants than non-migrants plan to migrate again for work on a temporary basis (20% non-migrants, 60% return migrants) and, respectively, on a permanent basis (3% non-migrants compared to about 9% among the returnees). In the restricted sample of the Returnees Survey, the average age of return migrants is 35 years. Since the average time spent back in Romania is three years, we predict the average age at returning to be 32 years.

| variable | whole sample | non-migrants (1) | returnees (2) | differential (1-2) |
|---|---|---|---|---|
| migration experience | .0557 | | | |
| | (.196) | | | |
| age | 41.621 | 41.816 | 37.974 | 3.841*** |
| | (.089) | (.091) | (.322) | (.321) |
| gender (f=0/m=1) | .465 | .453 | .756 | -.302*** |
| | (.002) | (.002) | (.011) | (.013) |
| years of schooling | 10.202 | 10.158 | 11.249 | -1.090*** |
| | (3.477) | (3.501) | (2.657) | (.093) |
| income (logs) | .962 | .952 | 1.145 | -.192*** |
| | (.005) | (.005) | (.028) | (.025) |
| unemployed (89-03) | .424 | .423 | .447 | -.024*** |
| | (.024) | (.025) | (.015) | (.012) |
| children | .634 | .634 | .636 | -.001 |
| | (.004) | (.004) | (.016) | (.016) |
| home ownership | .872 | .874 | .836 | .038*** |
| | (.002) | (.002) | (.010) | (.009) |
| urban (=1/rural=0) | .546 | .543 | .615 | -.072*** |
| | (.002) | (.002) | (.012) | (.013) |
| regional wage level | 2.030 | 2.030 | 2.024 | .015* |
| | (.001) | (.001) | (.007) | (.007) |
| region unemployment | 10.996 | 11.021 | 10.520 | .500*** |
| | (.019) | (.020) | (.086) | (.090) |
| region infrastructure | 67.122 | 66.784 | 75.297 | -8.512** |
| | (.621) | (.628) | (3.676) | (3.181) |
| emigration rate | .277 | .275 | .328 | -.053*** |
| | (.001) | (.001) | (.006) | (.006) |
| circular migration rate | 14.763 | 14.611 | 18.464 | -3.853*** |
| | (.089) | (.090) | (.488) | (.456) |
| kin/friends abroad | .113 | .101 | .390 | -.288*** |
| | (.001) | (.001) | (.012) | (.008) |
| receives remittances | .021 | .020 | .062 | -.042*** |
| | (.0007) | (.0007) | (.006) | (.003) |
| plan to migrate(no=0) | .225 | .206 | .670 | -.463*** |
| | (.002) | (.002) | (.012) | (.011) |

Note: The null hypothesis tested refers to mean(non-migrants)-mean(migrants)=0.
. *** indicates a .01 level of significance for t-tests.
Source: own calculation, NDS data.

Table 4.1: Descriptive statistics on returnees

| | non-migrants | returnees | total |
|---|---|---|---|
| plan to stay | 19,048 (75.58%) | 406 (31.40%) | 19,454 (73.42%) |
| migrate temporarily | 5,296 (21.01%) | 768 (59.40%) | 6,064 (22.89%) |
| migrate permanently | 860 (3.41%) | 119 (9.20%) | 979 (3.69%) |
| total | 25,204 (100%) | 1,293 (100%) | 26,497 (100%) |

Note: own estimation with restricted sample drawn from the NDS 2003

Table 4.2: Migration plans for non-migrants versus returnees

## 4.3 Wage premia to work experience abroad

### 4.3.1 Wages of returnees versus non-migrants

Our first question is if returnees perform differently than non-migrants on the labour market and if this difference is *caused* by their work experience abroad.

We first estimate standard OLS regressions with a single sample and a dummy variable indicating if the individual is a return migrant or not. The coefficients are like predicted by the human capital model. Men earn 20% more than women, one more year of education leads to about 8.9% higher earnings, each subsequent year of age gives approximately a 8.5% increase in earnings and the age-earnings profile is concave. Working in an urban area significantly increases wages with about 20%, while having a job in the agricultural sector decreases the wages with about 20%.

A job in the state sector earnes higher wages, although this seems to be more important for women than for men. Co, Yun and, Gang (2000) also found that persons working for firms owned partly by the government earn about 12% more than those employed by fully privately owned firms. Our results suggest that women working in firms fully or partly owned by the state earn about 8% more than those employed by firms totally in private hands. One can argue that, particularly during transition, enterprises with governmental participation take more advantage from business networks with other similar enterprise than do new private firms. Such newly established firms function in a fully competitive environment and have no access to state funding, tax cuts, or subsidies. Several studies showed that, during transition, gender imbalances are smaller in public sector employment than in private firms. Paternostro and Sahn (1999) found that gender discrimination in Romania is more pronounced at lower levels of education and in rural areas. The returns to education are higher in the public sector particularly at the lower end of the skills distribution. Women employed in the public sector seem less likely to be discriminated against

| | all sample | | men | | women | |
|---|---|---|---|---|---|---|
| variable | coefficient | p>\|t\| | coefficient | p>\|t\| | coefficient | p>\|t\| |
| sex | .235 | .000 | - | | - | |
| age(×10) | .363 | .000 | .247 | .000 | .473 | .000 |
| age$^2$ | -.040 | .000 | -.025 | .000 | -.054 | .000 |
| schooling | .089 | .000 | .082 | .000 | .094 | .000 |
| state sector | .059 | .013 | .041 | .129 | .080 | .001 |
| urban area | .193 | .000 | .181 | .000 | .206 | .000 |
| agriculture | -.255 | .000 | -.204 | .001 | -.312 | .000 |
| low skilled | .159 | .000 | .158 | .001 | .151 | .000 |
| blue collar | .290 | .000 | .326 | .000 | .248 | .000 |
| high skilled | .343 | .000 | .363 | .000 | .327 | .000 |
| manager | .615 | .000 | .672 | .000 | .580 | .000 |
| entrepreneur | .485 | .000 | .562 | .000 | .402 | .000 |
| regional FDI | .070 | .000 | .073 | .000 | .069 | .000 |
| returnee | .061 | .032 | .076 | .017 | .044 | .429 |
| constant | -1.20 | .000 | -.695 | .000 | -1.44 | .000 |
| adj. $R^2$ | 0.386 | | 0.305 | | 0.426 | |
| N | 20007 | | 9886 | | 10121 | |

Note: Estimation with NDS 2003.
Robust standard errors corrected for clustering into counties.

Table 4.3: OLS estimates of wage equations

and receive higher returns than in the private sector.

In all specifications we estimated, the coefficient for return migration stays positive and significant. After controlling for other individual characteristics, returnees earn on average about 6% more than non-migrants. The income premia estimated with standard OLS regressions are very similar to other results from the literature. Barrett and O'Connell (2001) obtained an equivalent 5% wage premium for Irish returnees. They too used OLS regressions without corrections for selectivity. Using standard OLS also without corrections, Co, Yun, and Gang (2000) estimated an income premium for Hungarian return migrants of a similar magnitude, i.e. about 4%.

After returning, men appear to benefit more from the work experience acquired abroad than do women. The wage premium for men return migrants is about 7.5%, while women who return do not earn significantly more than women who stayed in Romania. This might be related to differences in the nature of selection on unobservable characteristics between men and women who decide to migrate and to return. Similar gender differences for the returns to return migration have been detected by Barrett and O'Connell (2001) for Irish returnees. In their estimations only men received a significant income premium for being a returnee. For women the effect of

having work experience abroad was not significant[1].

We apply the same method as Co et al. (2000) to account for endogenous return migration and participation decisions. We estimate maximum likelihood models with two decision rules (treatments) captured by the dummies for return status and labour force participation. For the first selection rule, concerning the migration decision, we included the gender, the age, the type of locality of residence (i.e. rural or urban), a dummy variable indicating the presence of kin or friends abroad (used as a proxy for access to migrant networks) and a variable capturing the prevalence rate of migration from the local area - as a measure of social interactions (learning, peer effects) in the dynamics of migration decision[2]. We used two types of measures to account for historical migration experience at local level: cumulated lagged outflows at county level (for the 42 counties) and the local rate of migration at community level (for all the 3,200 administrative units). The data for these measures are extracted from the Migration Census 2001 (Diminescu and Lazaroiu 2001 discuss the method and the data in more detail).

These measures of migration networks (both at individual and community level) along with minority religion (catholic, neoprotestant or Muslim) are controls and exclusion restrictions for the migration decision in our model. We discussed some of the arguments in chapter 3. The identifying assumption is that migration networks and minority religion are nor correlated with wages and participation when we observe migrants back in Romania (at the time of the survey). The main intuition for the relevance of this type of networks or "peer effects" comes from the dynamics of migration as a cumulative process: past migration in a community provides resources and information which lower the costs and risks associated with a move abroad for potential new migrants. These can be planed as temporary moves from the beginning or return might be decided while abroad. But at least for the Romanian case higher lagged rates of migration are highly correlated with high rates of return migration. We use several measures for this community level migration in addition to the control for direct network ties (which are family members or friends abroad). Our measure captures the cumulated outflows from a municipality up to five years before the time of the survey. We consider therefore return migration as a function of past migration flows – observed at the smallest possible regional level, that of municipalities. There should be no direct effect from this past migration at community level on the current labour market performance of returnees. The labour market outcomes of return migrants depend on current economic conditions, on their human capital and on their individual migration experience. However, all results based on selection

[1] As already mentioned, Co, Gang, and Yun (2000) find different gender effects for returnees: the wage premium of work experience abroad was significant only for women and not for men. Their results should be treated with caution given the small size of their sample.

[2] The regional differences in migration and return patterns are illustrated in Appendix B.

| | all sample | | men | | women | |
|---|---|---|---|---|---|---|
| variable | coefficient | p>\|t\| | coefficient | p>\|t\| | coefficient | p>\|t\| |
| men | .230 | .000 | - | | - | |
| age(×10) | .361 | .000 | .259 | .000 | .473 | .000 |
| $age^2$ | -.039 | .000 | -.026 | .000 | -.054 | .000 |
| schooling | .090 | .000 | .082 | .000 | .094 | .000 |
| state sector | .059 | .000 | .040 | .000 | .080 | .000 |
| urban area | .200 | .000 | .178 | .000 | .206 | .000 |
| agriculture | -.257 | .000 | -.203 | .000 | -.312 | .000 |
| low skilled | .160 | .000 | .160 | .000 | .151 | .000 |
| blue collar | .289 | .000 | .328 | .000 | .248 | .000 |
| high skilled | .343 | .000 | .364 | .000 | .327 | .000 |
| manager | .623 | .000 | .672 | .000 | .580 | .000 |
| entrepreneur | .482 | .000 | .563 | .000 | .402 | .000 |
| regional FDI | .070 | .000 | .071 | .000 | .068 | .000 |
| returnee | .137 | .000 | .252 | .000 | .096 | .424 |
| constant | -1.22 | .000 | -.742 | .000 | -1.44 | .000 |
| selection equation for return migration | | | | | | |
| sex | .726 | .000 | - | | - | |
| age(×10) | -.174 | .000 | -.195 | .000 | -.122 | .000 |
| urban | .098 | .010 | .110 | .010 | .090 | .206 |
| kin abroad | .805 | .000 | .873 | .000 | .668 | .000 |
| peer effects | .020 | .000 | .015 | .010 | .029 | .000 |
| constant | -1.67 | .000 | -.870 | .000 | -1.86 | .000 |
| selection equation for labour force participation | | | | | | |
| sex | .439 | .000 | - | | - | |
| age | .239 | .000 | .271 | .000 | .205 | .000 |
| family size | -.093 | .000 | -.042 | .000 | -.108 | .000 |
| kids | .113 | .000 | .268 | .000 | .010 | .679 |
| constant | .089 | .056 | .213 | .000 | .274 | .000 |
| $\rho_{\varepsilon u}$ | -.09* | | -.156* | | -.038 | |
| $\rho_{\varepsilon v}$ | -.001 | | .001 | | -.31* | |
| $\rho_{uv}$ | -.04* | | -.07* | | -.03* | |
| $\sigma_{\varepsilon}$ | .576 | | .593 | | .557 | |
| N | 20007 | | 9886 | | 10121 | |

Note: Estimation with NDS data.

Table 4.4: MLE estimates of wage equations

models should be treated with caution given that we cannot test the validity of the identification strategy.

For the second selection rule, the decision to participate in the labour force, the baseline specification included the gender, the age, and the size of the family. All coefficients are significant at 1% and have the expected sign. The availability of other sources of income in larger households functions as a safety net during transition: due to the households subsistence strategies, members of larger families can rely upon other sources of income in case of unemployment. they might have therefore higher reservation wages than people living alone. Dummies controlling for other sources of income in the household were not included in the selection rule due to their high level of correlation to the individual wages. As expected, the presence of children in the household is a highly significant predictor of labour force participation. This is particularly the case for men, while women's labour force participation is likely to be conditional on the age of the children but we cannot control for it. The effects of all the other regressors included in the wage equation do not significantly change in the MLE estimation compared to the standard OLS results.

The NDS data contain no information on migrants' duration of stay abroad or the time they spent upon return in Romania. Both durations can influence the participation decision as well as the occupational choices of migrants. We address the latter aspect in next section using the 2005 Returnees Survey which contains indications of the duration of stay abroad and the time of return to Romania.

The OLS estimates of wage premia for return migration appear to be biased downwards. As the correlation coefficient $\rho_{\varepsilon u}$ between return migration decisions and wages indicates, return decisions are negatively correlated to the error term of the wage equation. Unobserved characteristics which make an individual more likely to be a returnee, have a negative impact on the individual's earnings capacity after returning to Romania. In other words, for given characteristics, the expected earnings of returnees may be lower than that of a random person from the population. For women, the correlation coefficient between the unobserved characteristics in the earnings and the migration equation is not significant. However, women appear to be negatively self-selected into participation. Unlike men[3], women display significant and negative correlations between the error term in the earnings function and the one in the participation decision ($\rho_{\varepsilon v}$). Women randomly self-select into return migration but they are negatively selected into labour force participation. Therefore simple OLS regressions underestimate their wages. The corrected coefficient for return migration in the ML estimation, although higher than in the OLS, is still not significant.

The correlation coefficient between the error terms in the selection equations for

[3]For all the specifications estimated, there is no evidence of selectivity into labour force participation by men. This finding is consistent with many empirical studies on employment participation in Eastern Europe. See e.g. Paternostro and Sahn (1999).

| | all sample | | non-migrants | | returnees | |
|---|---|---|---|---|---|---|
| variable | coefficient | p>\|t\| | coefficient | p>\|t\| | coefficient | p>\|t\| |
| men | .246 | .000 | .242 | .000 | .187 | .007 |
| age($\times$10) | .036 | .000 | .037 | .000 | .026 | .108 |
| age$^2$ | -.001 | .000 | -.001 | .000 | .000 | .104 |
| schooling | .090 | .000 | .090 | .000 | .085 | .000 |
| state sector | .060 | .000 | .048 | .000 | .234 | .000 |
| urban area | .193 | .000 | 192 | .000 | .197 | .000 |
| agriculture | -.255 | .000 | -.248 | .000 | -.289 | .024 |
| low skilled | .155 | .000 | .168 | .000 | -.006 | .956 |
| blue collar | .272 | .000 | .277 | .000 | .233 | .000 |
| high skilled | .326 | .000 | .321 | .000 | .457 | .000 |
| manager | .629 | .000 | .622 | .000 | .785 | .000 |
| entrepreneur | .493 | .000 | .456 | .000 | .789 | .000 |
| constant | -1.185 | .000 | -1.20 | .000 | -.872 | .031 |
| selection equation for labour force participation | | | | | | |
| sex | .419 | .000 | .431 | .000 | .437 | .000 |
| age | .024 | .000 | .024 | .000 | .028 | .000 |
| family size | -.002 | .030 | -.002 | .055 | -.007 | .205 |
| kids | .113 | .000 | .124 | .000 | -.011 | .900 |
| constant | -.385 | .000 | -.376 | .000 | -.600 | .002 |
| $\rho_{\varepsilon v}$ | .013 | | .014 | | -.023 | |
| N | 24167 | | 23047 | | 1120 | |
| censored | 4653 | | 4398 | | 255 | |
| uncensored | 19514 | | 18649 | | 865 | |

Note: Estimation with NDS data.

Table 4.5: MLE estimates of wage equations

migration and for participation ($\rho_{uv}$) is negative and significant in all estimations. This means that unobservable characteristics which would push a person into migration (and subsequent return) also pull her out of the labour force after returning to Romania.

Separate wage equations for non-migrants and returnees confirm these observed patterns. There are some differences in the estimated coefficients of labour force participation equations. Unlike for non-migrants, for returnees the family size and the presence of children in the household seem to have no effect on reservation wages. In the wage equation, apart from age becoming not significant for returnees, there are also no significant returns from having only a low level of occupational skills. This is consistent with low skilled migrants often working in informal jobs while abroad and thus having less possibilities to acquire (unobserved) skills which could be valuable upon returning on the Romanian labour market. This finding for lower skilled migrants is in line with a signalling approach to explain the wage determination of returnees, as opposed to the human capital model. Employers could take the return

| | returnees wages | non-migrants wages |
|---|---|---|
| unconditional | 1.175 | 1.029 |
| OLS | | |
| separate regressions | | |
| predicted actual mean | 1.102 | .969 |
| conterfactual mean | 1.032 | .983 |
| with correction | | |
| for participation | | |
| predicted actual mean | 1.112 | 1.063 |
| counterfactual mean | 1.117 | 1.005 |
| with joint correction | | |
| for participation and migration | | |
| predicted actual mean | 1.677 | 1.566 |
| counterfactual mean | 1.565 | 1.457 |

Note: Estimation with NDS data. The control variables are the same as in the discussed regressions. Actual wages are estimated as in equations (4.10) and (4.11), counterfactual as in (4.12) and (4.13)

Table 4.6: Predicted mean (log) wages for non-migrants and returnees

migration of lower skilled workers as a signal of lower productivity. If they believe that these returnees are failed migrants they will not be willing to pay a premium to hire them, but rather value their skills less.

We also estimate the counterfactual wages for migrants and returnees. We can look at selection not only in relation to (un)observable characteristics but to the actual and hypothetical performance of individuals on the Romanian labour market (see Tunali 1996 for a discussion of selection in this context). The results are reported in Table 4.6. Returnees appear to be positively self-selected: their actual predicted wages are higher than the counterfactual wages of stayers, i.e. returnees earn more than would non-migrants do had they decided to migrate and return. The results are in line with the rationality of migration choices discussed in chapter 3.

As the results in table 4.6 indicate, returnees' predicted actual wages ($E(\ln y_{mig} \mid m_i = 1) = \widehat{\beta}_{mig} X_{mig}$) are on average higher than their counterfactuals ($E(\ln y_{mig} \mid m_i = 0) = \widehat{\beta}_{sed} X_{mig}$). Non-migrants earn higher conditional wages ($E(\ln y_{sed} \mid m_i = 0) = \widehat{\beta}_{sed} X_{sed}$) than they would had they decided to migrate and return ($E(\ln y_{sed} \mid m_i = 1) = \widehat{\beta}_{mig} X_{sed}$). The corrected mean conditional wage of return migrants is higher than the predicted counterfactual wage of non-migrants ($E(\ln y_{mig} \mid m_i = 1) > E(\ln y_{sed} \mid m_i = 1)$). There are no differences between the performance of return migrants had they stayed and the actual performance of those who stayed in Romania. This means the overall selection is in the end neutral. Return migrants are first negatively selected from the total population with regard to their unobservable characteristics but positively with regard to observable characteristics. Return migrants outperform those who stayed in Romania both in actual

and in counterfactual terms. Had the non-migrants decided to migrate and return, they would still do worse on the labour market than return migrants actually do. However, there is no difference between the counterfactual performance of returnees, i.e. had they decided to stay, and the actual performance of stayers. This indicates that the positive selection of returnees in terms of observable characteristics compensates their negative selection with regard to unobservables. A potential explanation could involve a positive selection of migrants with regard to their unobserved ability to acquire skills while abroad. However, our results suggest that returnees seem unable to make productive use of these skills acquired abroad after they return to Romania. Or it might be again a case of different types of selection into migration and return – something that we are not able to address with the NDS survey data: migrants might be positively selected with regard to their ability to acquire human capital while abroad but returnees are negatively selected from the pool of migrants residing abroad. Those more able to invest in skills while abroad do not return. Such an explanation would be consistent with our findings. As before, we need to treat these results with caution given the assumptions we made for the validity of our identification strategy. However, the sign of the correction for endogeneity remains stable in all estimated models under different specifications of the selection rule.

### 4.3.2 Wages before migration versus upon return

The data of the 2005 Returnees Survey allow a closer look at the determinants of wages for return migrants. As already mentioned in section 4.2.1, this survey contains separate batteries of questions covering: the experience of migrants while abroad, retrospective information on what they did in Romania prior to migration, and their experiences and migration plans upon return. One main advantage of these data is that we can compare the outcomes of migrants before their initial move to those outcomes after they return and are observed in the survey. We also know more details about their saving/remitting behaviour which we include in the selection equation (these variables refer to the type of transfers and not the level of remittances which would clearly be endogenous in income equations) as well as some information about the duration of stay abroad, the countries of destination and the length of time upon their return to Romania. These variables are included in the specifications from table 4.7. They are important to explain the determinants of labour market outcomes and incorporate an additional dimension by allowing a before – after comparison.

The results show that both the age at migration and the duration of stay abroad had no significant effects on the wages of return migrants. This is relevant in so far as it confirms the hypothesis that the level of income in the home country can have two types of effects on the duration of stay abroad - equivalent to a substitution and an income effect - and these effects might outweigh each other in the estimation.

| | all sample | | men | | women | |
|---|---|---|---|---|---|---|
| variable | coefficient | p>\|t\| | coefficient | p>\|t\| | coefficient | p>\|t\| |
| sex | .037 | 0.535 | | | | |
| age | -.001 | .522 | -.001 | .855 | -.004 | .275 |
| education_2 | .278 | .006 | .154 | .230 | .431 | .004 |
| education_3 | .404 | .000 | .234 | .074 | .646 | .000 |
| education_4 | .328 | .017 | .223 | .234 | .461 | .011 |
| education_5 | .761 | .000 | .632 | .011 | .950 | .000 |
| education_6 | .787 | .000 | .639 | .000 | 1.04 | .000 |
| education_7 | .848 | .000 | .670 | .008 | - | - |
| time back | .022 | .004 | .017 | .052 | .042 | .007 |
| time abroad | .001 | .300 | .001 | .496 | .002 | .241 |
| language | .119 | .020 | .145 | .026 | .061 | .416 |
| constant | 4.952 | .000 | 5.178 | .000 | 4.705 | .000 |
| selection rule for participation | | | | | | |
| sex | .124 | .122 | | | | |
| age | .003 | .434 | -.000 | .952 | .006 | .321 |
| married | .286 | .001 | .421 | .000 | -.055 | .691 |
| child | -.089 | .010 | -.083 | .026 | -.145 | .064 |
| remittances | -.005 | .327 | -.004 | .428 | .000 | .967 |
| savings | -.010 | .081 | -.005 | .420 | -.056 | .005 |
| temporary | .166 | .033 | .093 | .999 | .398 | .005 |
| freq. remit | .025 | .006 | .041 | .000 | .009 | .633 |
| family mig. | -.193 | .008 | -.180 | .035 | -.071 | .602 |
| constant | -.379 | .048 | -.175 | .449 | -.554 | .081 |
| $\rho$ | -.689 | | -.776 | | -.572 | |
| $\sigma$ | .654 | | .731 | | .498 | |
| $\lambda$ | -.451 | | -.567 | | -.285 | |
| N | 1174 | | 787 | | 387 | |
| censored | 664 | | 432 | | 232 | |
| uncensored | 510 | | 355 | | 155 | |

Note: Estimation using data from the 2005 Returnees Survey.

Table 4.7: ML estimates of wage equations for return migrants

| | migrants vs non-migrants (1) | upon return vs. before migration (2) |
|---|---|---|
| women | 0 | +23% |
| men | +25% | +22% |
| low skilled | 0 | +25% |
| highly skilled | +35% | +30% |
| entrepreneurs | +50% | +25% |

Table 4.8: Overview of income premia upon return

For those who optimise their migration choices over the life-cycle, higher earnings in the home country mean also higher consumption possibilities and imply therefore a shortening of the periods spent for work abroad. A different rationale might apply for target savers if the purchasing power parities of their savings abroad are taken into account. We consider only nominal wages, which might be associated with a higher price index. The optimal strategy for a target saver might be to lengthen the duration of stay abroad to save more in real terms. Temporary migrants who decided to migrate in order to accumulate human capital and skills might also consider prolonging their stay abroad. If they accumulate more skills by staying longer and the returns to these skills are rising in the home country, their optimal duration of stay might be longer since their life-incomes upon return would increase.

The length of time after returning to Romania is significant and robust for all sub-groups. This is the equivalent of the standard "years since migration" variable in assimilation studies. Returnees have problems to re-integrate in the labour market immediately after return but they catch-up fast afterwards. As the estimates from table 4.7 suggest, the re-assimilation profile is steeper for women with migration experience than it is for men. The estimated selection equation reported in table 4.7, remittances do not have any impact on participation decisions but the total amount of savings repatriated from abroad sends returnees out of the labour market. The savings are however significant only for women who return after working abroad.

We summarise the results of our analysis of wages in table 4.8. We look at the conditional mean income differentials between migrants and returnees (column 1) and for returnees after return versus before migration (column 2).

The effect of return migration is not significant for women. For men on the other side, the conditional income premium for being a returnee is on average about 25%. The income premium for return migration is not significant for low skilled workers, but highly skilled receive on average about 35% higher wages if they accumulated work experience abroad. This finding is consistent with the observed migration patterns discussed in chapter 3. Low skilled temporary migrants work abroad in occupations with low skill requirements - often informal jobs - and have no opportunity to

upgrade their skills. Higher skilled migrants have more opportunities to accumulate skills during their spells of work abroad. Those who take the highest advantage from having work experience abroad appear to be the returnees who decided to become entrepreneurs. Entrepreneurs who have been working abroad possess better observable and unobservable characteristics and know better than non-migrant entrepreneurs how to make use of them.

### 4.3.3 Trained or drained: returns to foreign education?

In this section, we look at the productivity of Romanian graduates who return after studying abroad. This will shed some more light on the way in which temporary migration affects transition economies. The NDS data allow a comparison between returnees who come back after a spell of work abroad and those who return after studying abroad towards a degree. Despite the dramatic rise in international student mobility from Eastern Europe, there is no systematic evidence on the impact of foreign-educated returnees on economic development and institutional change in their countries of origin. This is because of data availability – hardly any of the surveys of return migrants include questions about studying abroad. And if they do, the sample sizes are too small to allow meaningful comparisons. Our sample is large enough for a tentative analysis of returns to foreign education.

Do foreign-educated returnees have better chances on the labour market of their home countries compared to those who did not study abroad? Recent research finds a positive impact of foreign education on decisions to work abroad after graduation (Rodrigues 2013, Di Pietro 2012, Parey and Waldinger 2011, Oosterbeek and Webbink 2011). Studying abroad allows students to gain language skills, knowledge about labour markets abroad, contacts to employers and in particular to acquire internationally recognised qualifications. Apart from this brain drain channel induced by foreign education, there is almost no evidence on the effects of foreign education from the perspective of the home country. Spilimbergo (2009) analyses the effects of foreign education on democratisation from a cross-country perspective. He finds evidence that foreign-educated returnees can foster democracy in their home countries when their education has been acquired in democratic countries[4]. Besley and Reynal-Querol (2011) document that in democracies political leaders are 12 per cent more likely to have studied abroad than in autocratic countries.

Messner and Wolter (2007) use mother's education as an instrument for participation in exchange programmes and find no effect of student exchange programmes

[4]Post-1989 transition economies are outliers in his study and should have been excluded from the analysis. During the period investigated, in these countries Soviet-style authoritarian regimes collapsed and the borders opened after the fall of the Berlin wall. See Figure A4 in Spilimbergo (2009) where all CEE countries are in the northeast corner of the scatterplot.

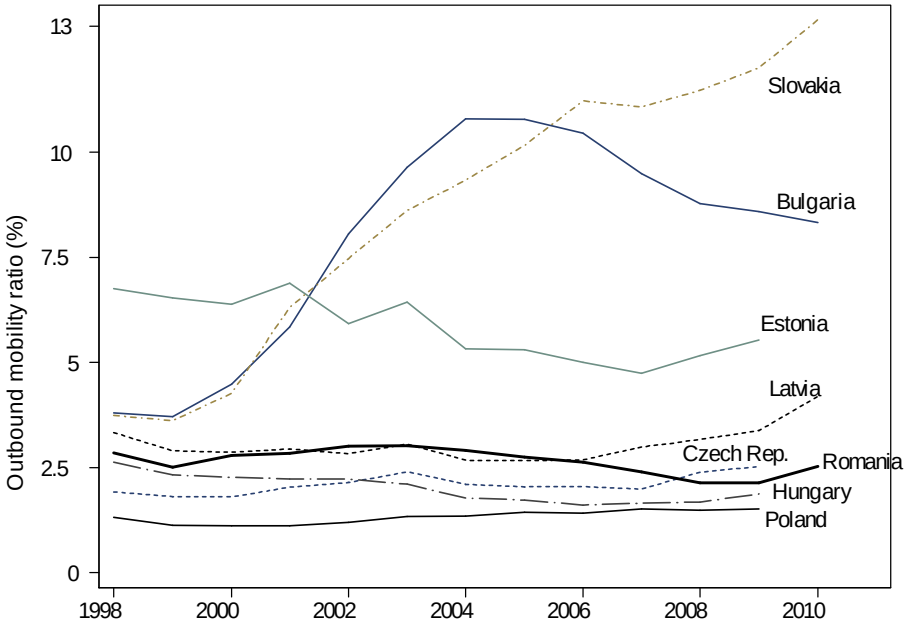



Figure 4.2: Students' outbound mobility ratio in CEE (students abroad over total number of students, UN data)

on the salaries of Swiss university graduates upon return.

But the case of post-communist transition economies is likely to be different. Both the motivation for leaving to study abroad[5] and the reasons for returning to work back home are different than in more advanced economies. Informal networks play a much more pronounced role during transition (see Lehmann and Tatsiramos, ed. 2012). Personal connections and informal practices played a critical role in business development during the early stages of transition. Access to networks and resources affected the opportunities to study abroad, the decision to return after graduation and the labour market choices upon return.

For all CEE countries, the outbound mobility ratio of students choosing to enrol abroad compared to nationals enrolled at home grew steadily after 1989. Figure 4.2 depicts this ratio (in percentages) for selected CEE countries around the 2000s. The European average for this period is 3.3 per cent. The majority of CEE countries is just below this average with the exceptions of Bulgaria and Slovakia, both having a ratio of students enrolled abroad to those studying at home above 10 per cent. We can treat these figures as lower boundaries because official registers underestimate the number of foreign students. Romania is about average with 2.7 per cent of the students enrolled abroad, just above Poland (2 per cent) and Hungary (2.1 per cent) and similar e.g. to the Czech Republic (2.5 per cent) or The Netherlands (2.6 per cent). Table 4.9 lists the main destination countries of Romanian students at the time

[5]See Beine et al. (2012) for a survey on the determinants of international mobility of students.

| Rank | Country | Absolute | % |
|---|---|---|---|
| 1 | Germany | 3,695 | 19.3 |
| 2 | France | 3,642 | 19 |
| 3 | United States | 3,407 | 17.8 |
| 4 | Hungary | 3,147 | 16.4 |
| 5 | Italy | 908 | 4.7 |
| 6 | Moldova | 734 | 3.8 |
| 7 | Spain | 623 | 3.2 |
| 8 | Switzerland | 452 | 2.4 |
| 9 | Austria | 451 | 2.4 |
| 10 | United Kingdom | 447 | 2.3 |
| | Top ten countries | 17,506 | 91.3 |

Table 4.9: Main destination countries of Romanian students 2003

we observe those returning home in our the survey. This period is relevant for our analysis because it is before Romania joined the EU. It was not yet part of European student exchange programmes, like ERASMUS. There were other programmes in place designed to support higher education in (at that time) EU-partner countries in Eastern Europe (like TEMPUS). But their numbers were limited and Romanian students could not easily obtain other EU grants or student loans abroad. They needed to finance their studies abroad themselves or through their families. The ranking of the top destination countries is different for students enrolled abroad than for migrants employed abroad. Besides the costs and opportunities for studies, traditional academic links (e.g. with France and Germany) and distance and ethnic-linguistic ties (e.g. with Hungary and Moldova) explain part of these differences.

We present a fist comparison between return migrant workers and foreign educated returnees in table 4.10. The first striking results of our descriptive analysis is that the two groups are perfectly disjunct: almost none of the return migrants who worked abroad also studied abroad and vice versa, none of those who studied abroad gained work experience abroad.

This is surprising because the questions are explicitly kept separate in the questionnaire and both choices allowed. The sampling frame and the sample size of the NDS data ensure representativity not only geographically but between different strata of the population. On account of this, the finding simplifies our identification problem for the comparison between returns to foreign education and to work experience abroad. It also has a simple explanation based on a compelling (selection) story: those who study abroad do not (self-select into) return but remain abroad if they find a job there after graduation. Those who study abroad and return do this probably for good reasons. At the time when their student visa expires they might have (informal) networks, family or personal connections in the home country which guarantee a well-paying job upon return.

| | (1) Stayers | (2) Worked Abroad | (3) Studied Abroad | p-value for equality across groups |
|---|---|---|---|---|
| Age | 41.09 | 37.77 | 36.04 | 0.00 |
| Women | 0.551 | 0.232 | 0.528 | 0.00 |
| (log) Wage | 1.165 | 1.343 | 1.645 | 0.00 |
| State employee | 0.215 | 0.132 | 0.422 | 0.00 |
| Entrepreneur | 0.084 | 0.159 | 0.199 | 0.00 |
| State employee + firm | 0.073 | 0.136 | 0.228 | 0.00 |
| Father high educ. | 0.052 | 0.056 | 0.402 | 0.00 |
| Father high occup 1989 | 0.067 | 0.065 | 0.381 | 0.00 |
| Minority religion | 0.104 | 0.196 | 0.258 | 0.00 |
| Migrant network ties | 0.109 | 0.399 | 0.246 | 0.00 |
| Number of children | 1.120 | 1.071 | 0.621 | 0.00 |
| In good health | 0.539 | 0.655 | 0.737 | 0.00 |
| Nr. of observations | 22,706 | 1,279 | 256 | |

*Notes*: The table shows the weighted means of variables by migration status. The p-value in the last column is for the F-test of equality of variable means across all three groups. Entrepreneurs are business owners. State employees with firm are either themselves or a household member business owners .Father high education is a dummy indicating if the respondent's father received tertiary education. Father high occupation is a dummy indicating if the respondent's father had a managerial or highly skilled position (while active).

Table 4.10: Descriptives for work abroad versus study abroad

The descriptive analysis presented in table 4.10 supports our argument about the selection of foreign educated students on characteristics related to the family background and informal networks. The results differ in part from those presented in section 4.2.2 because the weights applied to subgroups are slightly different. As expected, those who studied abroad and returned home are on average younger, more likely to be women, more likely to become entrepreneurs upon return, have less children and are in better health than both returning migrant workers and non-migrants. Less expected is the high proportion of foreign educated return migrants who are state employees. It contrasts with the lower probability of migrant workers to be employed in the state sector after returning. Even more intriguing is the three times higher likelihood of returning former students compared to non-migrants to be at the same time employed by the state and to own a business. This is a well documented strategy in transition economies to use informal practices and networks in the operation of private businesses by accessing public resources and lucrative contracts (see e.g. Ledeneva 1998). In line with our selection hypothesis, foreign educated returnees are almost eight times more likely to have university educated parents than non-migrants or returning migrant workers. The fathers of those who studied abroad and returned are about six times more likely to have held high ranking position in the centrally planned economy, in the army or the communist party nomenklatura before 1989, compared to the fathers of non-migrants or returning migrant workers.

It is therefore no surprise to find that for studying abroad, access to migrant network ties is less important than for working abroad. The use of migrant networks is a reaction of common individuals to economic constraints during the "transformational recession" (Kornai 1994). They provide information about work opportunities in other countries and support, trust and resources while abroad. But they do not help migrants to find better employment upon return. In contrast, representatives of the upper echelons of the former communist bureaucracy and their relatives did not face similar constraints during transition. They had better starting conditions in the immediate aftermath of communism being close to a strong and well connected apparatus (Brucan 1998). It is this type of connections and informal networks - not the migrant networks - which increases the likelihood of descendants of the former elite to study abroad, the probability that they return, and their chances of high-yielding occupations back home.

Our findings are similar to qualitative evidence from sociological research on the (re)formation of business and political elites during post-communist transition. In this literature, the dominant view of elites in Easter Europe after 1989 is one of "reproduction": the changes of regime did not fundamentally alter the social composition of elites (for the Romanian case see e.g. Brucan 1998, Culic 2002, Ştefan 2004).

The alternative, elite "circulation", would imply that transition to post-communism produced a break in the structure of the elite and new people were recruited at the top of the hierarchy. None of the available studies addressed the role of international mobility and foreign education in the formation of post-communist elites. East-West migration is considered only in terms of skills but not in terms of elites. (see Solimano and Avanzini 2012 for a survey).

This persistence and reproduction of elites in Romania has direct implications for our analysis. It suggests intergenerational continuity before and after 1989. Before 1989, the only people allowed to study abroad were descendants of nomenklatura members. After 1989, borders opened and more people could study abroad. But our selection argument kicks in when those who went to study abroad after 1990 decide whether to return or not.

If the unobserved characteristics which drive the decision to study abroad (and return) are correlated with employment opportunities at home, simple estimates of the payoff to foreign education will suffer from selection bias. This omitted variables bias will affect naive comparisons of wages for non-migrants, returnees who worked abroad and those who studied abroad. Table 4.11 reports the means of log earnings for the three groups (column 1) and the differences-in-means between non-migrants and returnee wages in column 2. The results for return migrant workers are the same as those reported in chapter 3. Returnees who worked abroad earn on average 16 per cent more than non-migrants, while those who studies abroad have 46 per cent higher wages than non-migrants. Column 3 shows regression estimates of the effect of return migration / foreign education status on wages, controlling for a set of covariates that include individual and family characteristics. Controlling for covariates reduces the difference between non-migrants and foreign educated returnees by more than 65 per cent. For those who studied abroad, most of the correction comes from the variation in parental characteristics - which was our argument in the previous discussion. If all variables that determine the selection into working / studying abroad (and returning) would be observable and included in the regression equations, we would obtain unbiased estimates of the wage returns to work abroad and to study abroad. But the selection on observables characteristics is unlikely to hold. We use the same set of covariates from the regression to construct matching estimates and report them in column 6. They are similar to the regression results just but inference relies on common support and does not depend on functional form assumptions. However, unobserved characteristics might still bias the estimated wage differentials in column 3 and 6.

| | (1) Average log wages | (2) Diff. in means stayers vs. returnees | (3) OLS regression estimates | (4) ML endogeneity correction | (5) IV regression estimates | (6) Matching estimates (ATT) |
|---|---|---|---|---|---|---|
| Stayers | 1.167 | | | | | |
| Work abroad | 1.323 | .163<br>(.023) | .084<br>(.021) | .161<br>(.056) | .275<br>(.129) | .089<br>(.026) |
| Study abroad | 1.624 | .463<br>(.044) | .168<br>(.037) | -.022<br>(.191) | -.0482<br>(.535) | .196<br>(.070) |

*Notes*: The table reports the effects of return migration on (log) wages using the NDS 2003 data.
Covariates used in columns 2-5 include age, education, gender and family characteristics (e.g.) parental occupation 1989
In column 4, the full ML estimates (Maddala 1983) correct for the endogeneity of return migration using migrant network ties (kin abroad, migration rate) and minority religion (catholic, neo-protestant, or Muslim) as exclusion restrictions.
These are also used to instrument for the endogeneity of return migration in the IV 2SLS regression in column 4
(first stage for work abroad: F-statistic 28.82, Sargan test: 4.83, for study abroad: F-statistic 16.80, Sargan test: 4.83)
The matching estimates in column 6 are based on common support by age, gender, education and lagged regional migration rates obtained from census data.
Standard errors in parentheses. Full data for 12,771 non-migrants; returnees: 634 worked abroad, 186 studied abroad.

Table 4.11: Wage premia for work abroad and for study abroad

We deal with this possibility by fitting two additional models: a maximum likelihood treatment-effects model (Maddala 1983, see also section 3.2) and a 2SLS instrumental-variables regression. We use for both the same exclusion restrictions as in section 4.2, the measures of network ties: family members abroad, prevalence rate of migration at local (community level) and the affiliation to minority religious groups (we discussed the arguments in favour of these restrictions in chapter 3). For participating in foreign education, we used in addition the father's level of education. The instruments are relevant because the variables are strong predictors of the migration status and of participation in foreign education (first stage F-statistics are both large). The credibility of our exclusion restrictions hinges upon the channels through which our measures of network ties and the father's education affect wages upon return. The assumption we make is that neither migrant network ties nor the father's education affect labour market outcomes upon return in any other way except via correlation with migration status or with participating in foreign education. Under these conditions, both models present a broadly similar picture. The results are reported in columns (4) and(5) in Table 4.11. They suggest that the OLS estimates of returns to work experience abroad are biased downwards and those of returns to foreign education are biased upwards. Return migrants are negatively selected while those who studied abroad (and returned) are positively selected on unobservables which determine wages upon return.

As a robustness check, we estimated the same specification on the sub-group of graduates (returnees and non-migrants). None of the results changes qualitatively. The effect of studying abroad (rather than in the home country) on the observed earnings in Romania has a smaller magnitude but the same sign and significance level. Since we are not ultimately interested in the magnitude of the effect – given all the limitations of the data and of our identification strategy – this does not alter the interpretation of our findings. However, we have to treat these results with caution. But even if we only use them to set lower and upper bounds for the potential returns to return migration, they provide useful insights for the effects of temporary migration. They mean that work experience abroad has a positive impact on productivity upon return, while studying abroad is only positively associated but not causally linked to high productivity on the home labour market. This finding mimics closely the cross-country results in Rodrigues (2013), who finds no statistically significant effects for participating in foreign education for the East European countries included in the study. It is also consistent with evidence from China (Sun 2013) which suggests a mismatch between the skills of foreign educated returnees and the demands of the Chinese market.

The broader implication of our analysis relates to the ambiguous role of elite migration for the prospects of institutional change in the sending countries. In contrast

to other results (e.g. Spilimbergo 2009), for some CEE countries foreign education contributes to the reproduction and persistence of elites (as in Acemoglu and Robinson 2008) rather than their circulation.

## 4.4 Occupational choices upon return

In this section we summarise results from models estimated to analise the occupational choices of return migrants in Romania. It provides additional insights on the re-integration of returnees in the home labour market after spells of work abroad. Occupational mobility is particularly relevant in the case of transition from a centrally planned economy. The structural composition of the (post-)socialist labour force was not matching the requests of a functioning labour market in terms of occupations and skills.[6]

Most studies address the entrepreneurial choices of returnees and only to a lesser extent their occupational upgrades in terms of employment status or skill content of jobs. We address first the determinants of labour market participation and of job switches after return compared to before migration. Occupational switches during transition are determined by many factors[7]: industrial decline and restructuring, occupational mismatches, individual characteristics determining career paths, etc... How do return migrants fare in this context? Both the individual and the aggregated impact of return migration will eventually depend on the job type and the employment status migrants choose upon re-entering the Romanian labour market. Do returnees change their employment status after returning? Compared to the jobs they had before migration, are returnees climbing up the occupational ladder?

We use the 2005 Returnees Survey to look at occupational mobility upon return versus before migration. We identify switches between participation, non-participation, and self-employment using retrospective information on employment biographies prior migration. A returnee has three options when back in Romania: to stay in the same employment status, to switch from not-employed to employee or self employed, or from employee to self-employed (defined as an upgrade[8]), or the switch

[6] A detailed survey of labour market related issues in the context of transition is provided by Svejnar (1999) and Boeri and Terrell (2002). Blanchard (1997) is an excellent textbook treatment of the underlying basic mechanisms of labour reallocation during transition.

[7] Earle (2012) analyses both the magnitude and the determinants of labour market flows in Romania in the early years of transition.

[8] This is used just as a matter of definition, to simplify the comparison with occupational upgrades based on the skill content of jobs. It also alludes to a more productive use of skills acquired abroad. The main issue which we cannot properly address with the 2005 Returnee Survey data is the distinction between entrepreneurs who own a business and self –employed who are only temporarily in some form of informal employment – the so called "parking lot" hypothesis discussed in chapter 2. But we assume that self-employment allows a more productive use of skills and resources acquired while working abroad – this is in part reinforced by the findings in the previous section that returnees who work as self-employed or entrepreneurs obtain the highest income premia compared to the

| labour force status | after return | | | |
|---|---|---|---|---|
| before migration | non-particip | employee | self-empl. | total |
| non-particip | 275 (45.61%) | 83 (21.45%) | 43 (23.37%) | 401 (34.16%) |
| employee | 278 (46.10%) | 294 (75.97%) | 83 (45.11%) | 655 (55.79%) |
| self-empl. | 50 (8.29%) | 10 (2.58%) | 58 (31.52%) | 118 (10.05%) |
| total | 603 (100%) | 387 (100%) | 184 (100%) | 1,174 (100%) |

Note: data from the 2005 Returnees Survey.

Table 4.12: Transition matrix for employment status

from self-employment into non-employment or salaried work, or from salaried work to non-employment (defined as downgrade).

We use the refined categories of the variables depicting the occupation of returnees prior migration and after return. These variables are consistently constructed for the two periods and classify the occupations into 15 categories. These categories are ordinal. They rank the occupations according to their skill content (e.g. highly skilled and managers, skilled technical workers, skilled agricultural workers, medium skilled, unskilled, not-employed, etc...). We compare the occupations before migration to those after return and construct three groups for the post-migration job switches of returnees: staying in the same category, upgrading, or downgrading.

The transition matrix depicted in Table 4.12 shows that most returnees maintain their labour force status when they return compared to before migration: about 53 per cent stay in the "same" employment status. The groups under the diagonal of the transition matrix correspond to those whom we defined as "upgrading" their employment status, i.e. about 28 per cent of the returnees switched either from non-employment to salaried work or self-employment, or from salaried work to self-employment. The categories above the diagonal of the transition matrix correspond to those who, in our definition, "downgrade" their employment status upon return: i.e. about 19 per cent of the returnees switched into non-participation or gave up their entrepreneurial activities.

Our figures are in line with other results from the literature. In their analysis of Turkish return migrants, Dustmann and Kirchkamp (2002) found that 42,72 per cent of the returnees were not participating in the labour force after returning to Turkey. Using data from the Hungarian Household Panel Survey (1993/1994), Co, Yun and Gang (2000) estimated that about 47 per cent of the Hungarian returnees were not participating in the labour market upon return. This corresponds to a

similar group among non-migrants.

| | skills content of occupations | labour force status |
|---|---|---|
| same | 467 (39.78%) | 627 (53.41%) |
| upgrade | 250 (21.29%) | 338 (28.79%) |
| downgrade | 457 (38.93%) | 209 (17.80%) |
| total | 1,174 (100%) | 1,174 (100%) |

Note: own estimation with the 2005 Returnees Survey

Table 4.13: Occupational switches after return

non-participation rate of 50 per cent estimated for return migrants with the 2005 Returnees Survey and of 37 per cent estimated with the NDS data. Similarly, about 10 per cent of the return migrants in the NDS 2003 and about 15 per cent of those from the 2005 Returnees Survey are self-employed. This is lower than the figure estimated by Dustmann and Kirchkamp (2002) for Turkish returnees, but very close to the result obtained for Hungarian return migrants by Co, Yun and Gang (2002), i.e. about 10 per cent.

Based on these classifications, we estimate two (maximum-likelihood multinomial logit) regressions: one for occupational status and one for the skill content of occupations. The dependent variables are defined by comparing the employment status and, respectively, the skill content of the jobs prior migration and after return. We use the three groups defined above in the transition matrices: "same" (for no change after returning versus prior migration), "upgrade" (for all the transitions below the diagonal of the transition matrix), and "downgrade" (for all switches located above the diagonal).

Table 4.14 presents the results for switches in the employment status. All coefficients are measured relative to the base outcome which is staying in the same employment status after returning as before migration. Older returnees are more likely to not participate (downgrade), maybe also due to early retirement. Compared to women, men with work experience abroad are more likely to "upgrade" their status as before migration. The time spent in Romania since returning from abroad, the years since (return) migration ($ysm$), is significantly and negatively related to "downgrades" and positively related to "upgrading" the employment status. The longer a returnees is back from work abroad, the higher the chances that he is active either as employee or as self-employed. Returnees who are only temporarily back in Romania and plan to re-migrate have a different labour market behaviour than those who are permanently back. Returnees who did not manage to improve

| variable | coefficient | $p > \|z\|$ | $\frac{dY}{dX}$ | $p > \|z\|$ | X |
|---|---|---|---|---|---|
| downgrade | | | | | |
| age | .049 | .000 | .011 | .001 | 35.733 |
| man | .182 | .233 | .011 | .702 | .670 |
| ysm | -.212 | .013 | -.058 | .000 | 1.801 |
| $ysm^2$ | .012 | .076 | .003 | .007 | 10.848 |
| re-migration | .729 | .000 | .177 | .000 | .443 |
| remittances | .596 | .020 | .105 | .029 | .153 |
| savings | -.001 | .871 | -.001 | .579 | 2.906 |
| upgrade | | | | | |
| age | -.035 | .000 | -.006 | .000 | 35.733 |
| man | .647 | .001 | .071 | .001 | .670 |
| ysm | .398 | .000 | .060 | .000 | 1.801 |
| $ysm^2$ | -.028 | .000 | -.004 | .000 | 10.848 |
| re-migration | -.784 | .000 | -.127 | .000 | .443 |
| remittances | .298 | .343 | .013 | .720 | .153 |
| savings | .017 | .095 | .002 | .069 | 2.906 |
| N | 1,174 | | | | |

Note: 2005 Returnees Survey. $\frac{dY}{dX}$ for discrete change of dummy variables from 0 to 1. Outcome 'same' is the reference group.

Table 4.14: Multinomial logit for occupational status

their occupational status after returning might be more determined to plan a new migration precisely because of this failure.

As already mentioned, we can distinguish between savings transferred home by migrants when they return and the remittances they sent while abroad. The amount of remittances sent from abroad has a large and significant effect on the probability that the returnee will not participate in the labour market upon return. This result confirms our earlier estimations of labour force participation with the NDS data. Receiving remittances significantly predicted leaving the labour force - for both returnees and non-migrants.

In contrast, the total amount of savings accumulated while abroad is positively related to upgrades in the employment status after return: i.e. changes from non-employment or into self-employment. These results are consistent with the hypothesis from the literature that savings accumulated while abroad are used by returnees to overcome liquidity constraints or capital market imperfections in their regions of origin.[9]

We obtain almost identical results from models based on changes in the skill content of the jobs migrants took after returning to Romania[10]. As in the case

[9] See e.g. Mesnard (2004).

[10] The ordinal structure of the variable capturing the changes in the skill content of jobs can be used to estimate ordered logit models. The resutls are similar and we wanted to keep the model reported in Table 4.15 comparable to that from Table 4.14.

| variable | coefficient | $p > \|z\|$ | $\frac{dY}{dX}$ | $p > \|z\|$ | X |
|---|---|---|---|---|---|
| downgrade | | | | | |
| age | .029 | .000 | .008 | .000 | 35.733 |
| man | .339 | .019 | .071 | .021 | .670 |
| ysm | -.028 | .721 | -.020 | .215 | 1.801 |
| $ysm^2$ | .003 | .575 | .001 | .001 | 10.848 |
| re-migration | .488 | .001 | .132 | .000 | .443 |
| freq. remitt. | -.049 | .003 | -.009 | .008 | 6.793 |
| constant | -1.24 | .000 | | | |
| upgrade | | | | | |
| age | -.013 | .128 | -.004 | .000 | 35.733 |
| sex | .103 | .542 | -.009 | .713 | .670 |
| ysm | .174 | .041 | .030 | .013 | 1.801 |
| $ysm^2$ | -.005 | .471 | -.001 | .259 | 10.848 |
| re-migration | -.204 | .257 | -.072 | .240 | .443 |
| freq. remitt. | -.028 | .148 | -.000 | .799 | .120 |
| constant | -.221 | .565 | | | |
| N | 1,174 | | | | |

Note: 2005 Returnees Survey. $\frac{dY}{dX}$ for change of dummy variables from 0 to 1. Outcome 'same' is the reference group.

Table 4.15: Multinomial logit for job switches (skills)

of participation, the mobility on the occupational ladder is also influenced by the remitting behaviour of migrants. We include in our model the frequency of remitting money during the stay abroad. Results are reported in table 4.15. Remittances sent more frequently might indicate a stronger involvement of migrants in the activities of their families and communities in the home country. Sociological studies[11] highlighted the role of remittances in maintaining and strengthening this relationship. Upon return, such networks can provide returnees with relevant information about job opportunities or prevent them from loosing the positions they hold before leaving. This might explain why returnees who sent remittances more frequently while abroad are more likely to stay in the same position on the occupational ladder as before migration.

Our earlier results on the wage effects of return migration suggest that self-employed persons are profiting more from their work experience abroad than do returnees who work as employees. The models of the returnees' occupational switches also show that savings accumulated while abroad increase the propensity to become an entrepreneur after returning to Romania. Comparing both non-migrants' with returnees' and pre-migration with post-return occupational choices reveals that work experience abroad substantially increases the propensity to engage in an entrepreneurial behaviour or to prefer self-employment over waged employment.

[11] See e.g. Portes (1997).

Other studies observed that return migrants exhibit higher rates of entrepreneurship than non-migrants.[12] Most of them test the effects of overseas savings and the duration of stay abroad on the decision to become an entrepreneur after returning. The theoretical motivation revolves around the importance of savings transferred from abroad in overcoming credit constrain for. Further arguments are related to the role of skills accumulated while abroad for decisions over entrepreneurial activities upon return[13]. The intuition behind is that migrants might learn how to run a business while working in a developed market economy and therefore be more prone to set up their own business upon return.

## 4.5 Conclusions

The main implication of our results using Romanian data is that migrant workers improve their labour market performance after returning to the home country. Because of their work experience abroad, they receive positive wage premia upon return compared both to non-migrants and to themselves before migration. Compared to non-migrants, returnees are positively self-selected on observable characteristics and negatively on unobservables. The role played by networks in migration decisions suggests a possible explanation for the type of selection. Unobserved to the researcher, network ties facilitate the flow of information about opportunities abroad but do not improve the employment prospects after return. Longer spells of work abroad keep migrants "out of sight, out of mind" (Wahba and Zenou 2008) so that their social capital, which would otherwise provide job opportunities in the country of origin, depreciates. The type of selection seems to be different for those who study abroad and return to work in the home country. Foreign educated returnees are positively selected on unobservables, which means studies abroad are associated with but do not cause better labour market outcomes upon return.

Return migrants are less likely to participate on the labour market than non-migrants. They are more likely to switch into self-employment or to become entrepreneurs. We also find that remittances and repatriated savings affect occupational choices of returnees. In particular, more frequently sent remittances from abroad improve the chances that migrant workers climb up the occupational ladder upon return. This could confirm the importance of networks: more frequent transfers from abroad maintain ties in region of origin which can help with the job search after return.

The results we discuss throughout this chapter must be treated with caution. They depend on the nature of selection in migration and return. It is therefore

[12] See e.g. Ilahi (1999), McCormick and Wahba (2001), Piracha and Vadean (2010).
[13] E.g. Dustmann and Kirchkamp (2002).

important to understand what determines return decision. They might be part of a strategy to move abroad temporarily to acquire skills, accumulate savings, send remittances and use these in productive ways after returning. The next chapter looks in more detail at what affects the return plans of migrants.

# Chapter 5

# Anti-immigrant backlash and return migration

This chapter addresses the link between native attitudes and return migration. We exploit the variation in xenophobia using information on media consumption by migrants in Italy.

A widely documented crime provides a quasi-experimental setting to identify the impact of Italian attitudes on migrants' settlement intentions. Our results suggest a significant effect of anti-immigrant attitudes on the intended duration of stay in the host country. The impact is more pronounced for low-skilled migrants, which has consequences for how migration affects the long run convergence between sending and destination countries.

## 5.1 Introduction

Do changes in natives' attitudes towards immigrants affect the plans of foreign born to return to their countries of origin? There is little evidence in the current literature to answer this question. This is puzzling considering the economic importance of return migration and the impact of return intentions on the integration of immigrants in their host society. The self-selection of return migrants leads to important compositional changes in the cohorts of foreign born who remain in their destination country compositional changes have major consequences for labour markets in the host countries as well as for economic development in the sending (often transition or developing) countries. Return intentions are positively correlated with return realisations and are driven by the same determinants (e.g. Borjas and Bratsberg 1996, Yang 2006, Dustmann et al. 2011) incorporates the role of natives' attitudes in the out-migration decisions of foreign born. There is to date no empirical study of the effects of natives' attitudes on the flows of return migration. The formation of public attitudes towards migration and their interaction with migration policy making have been the subject of considerable research in economics (Facchini and Mayda 2008,

Hanson et al. 2009, Facchini et al. 2013, Gang et al. 2013). In this paper we address precisely the missing link between explaining public attitudes towards migration and assessing their impact on return migration.

We use the case of Romanian migrants in Italy to demonstrate how a sharp negative shock in attitudes of Italians towards a specific group of foreigners impacts on their plans to return to their home country or to settle at destination. Specifically, we compare migrants with and without previous exposure to anti-immigrant stereotypes before and after a strong negative shock in natives' attitudes. The shock developed as a response to a crime committed by a Romanian migrant in October 2007. The extensive media coverage of this event and the duopolistic nature of Italian television provide us with a quasi-experimental setting to identify the impact of natives' attitudes on return intentions. We find a significant impact of the change in attitudes on migrants' plans to stay in Italy. Moreover, unskilled migrants seem to be affected more by the shock than highly skilled migrants.

The paper most related to ours in spirit is Friebel et al. (2013). They use a similar set-up to analyse the impact of xenophobic attacks in the host country on emigration from the source country. For the case of Mozambique, they identify a significant reduction in emigration intentions after a series of xenophobic attacks targeting immigrants in the regions of destination, in South Africa. Our findings also complement the results of Gorinas and Pyltlicova (2013) who analyse the link between native attitudes and migration flows in a cross-country setting. They conclude that natives' hostility, measured by the extent of potential labour market discrimination, reduces migration inflows. Several other studies confirm the importance of migration intentions and their role in predicting actual migration (e.g. Burda et al. 1998, Gordon and Molho 1995)

Our paper provides, to our knowledge, the first empirical evidence linking natives' attitudes to return intentions. In this context, the case of Romanian migration to Italy is particularly relevant. Starting from the turn of the century in 2000, Romanian migrants became the largest group of foreign born in Italy. Italy is by far the most important destination country for emigrants leaving Romania. The overall share of the foreign-born residents in Italy grew dramatically from 0.8 per cent in 1990 to more than 7 per cent in 2010. This sharp increase in a short period of time was accompanied by raising anti-immigrant attitudes among the native population. For example, in 2007, Italians were overwhelmingly considering immigration as a worrying problem in their country. Migrants from the Middle East, North Africa and Eastern Europe were perceived as having a detrimental impact on Italy (Horowitz 2010).

The immigration-crime nexus has been a salient issue of the Italian media landscape. It is historically highly polarized (Hallin and Mancini 2004)and characterised by partisan bias (Durante and Knight 2012). Television is the most popular in-

formation medium for a large proportion of the Italian population (D'Avanzo 2007, CENSIS 2007). Italian TV is dominated by two networks - RAI, the state broadcaster and Mediaset, the largest commercial media company in Italy, controlled by Silvio Berlusconi. The RAI channels subscribe to a public service mission and attempt to cover in a balanced way themes around race, immigration and diversity. In contrast, Mediaset news programmes in particular devoted much more prime transmission time than RAI programmes to crime and security issues (Durante and Knight 2012) often linked to crimes committed by immigrants or to illegal immigration (Diamanti 2008). We use this contrast in the presentation of immigrants between RAI and Mediaset to account for differences in immigrants' exposure to stereotyping and negative attitudes towards their community. The shock in attitudes and media coverage from October 2007 allows us to construct a difference-in-differences (DID) model in which we exploit the increased exposure to anti-immigrant attitudes for migrants who have been using RAI channels as main source of information.

A number of recent studies have stressed the role of media exposure in shaping migration choices and attitudes. Farré and Fasani (2013) uncover a causal negative relationship between TV exposure and internal migration decisions in Indonesia. They attribute this link to imperfect information suggesting that TV exposure mitigates the individual valuation of gains to migration. Facchini et al. (2009) find evidence supporting the correlation between media exposure and attitudes towards illegal migration in the US. Héricourt and Spielvogel (2014) demonstrate that media is a crucial explanatory factor in the formation of beliefs about the economic impact of immigration. In Italy, Mai (2001, 2004) describes how the media, especially television, had a major impact on the expectations, perceptions and overall migration experience of Albanian migrants.

The rest of this chapter is organised as follows. Section 5.2 presents relevant stylised facts on the flows and stocks of Romanian migrants in Italy. It also introduces the particular context of the analysis. Section 5.3 presents the data, some descriptive evidence and the method applied for the estimation. Section 5.4 discusses the results and the limitations of our approach. In Section 5.5 we present additional results and falsification tests. Section 5.6 concludes.

## 5.2 Background and motivation

### 5.2.1 Stylized facts on Romanian migration to Italy

According to the World Bank - Migration Factbook 2011, international migration flows between Romania and Italy form one of the top ten European "migration corridors". While these flows started by the mid 1990s, they developed continuously

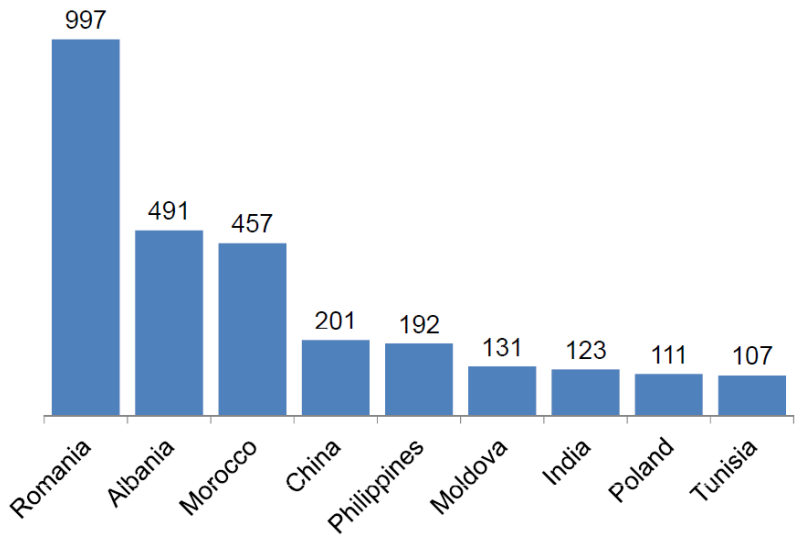



Figure 5.1: Main countries of origin of migrants in Italy 2011 (stocks in thousands; Source: Istat)

until Romania's EU accession in 2007. Between 1992 and 2007, Romanians together with Albanians were the two nationality groups experiencing the largest increase among the foreign born population in Italy (Bettin 2011).

However, during this period, Romanians became the largest immigrant community in Italy. Figure 5.1 illustrates the stocks of migrants in Italy by country of origin at the level of 2011. The incidence of Romanian migrants rose by more than 15 times, while the overall foreign population in Italy rose in the decade preceding the year 2008 by around 400 per cent.

Over the same period of time, Italy represented by far the most important destination country for Romanian migrants. Data from the 2011 Romanian census suggest that almost 50 per cent of the Romanian migrants identified as being abroad in the census year were residing in Italy (see Figure 5.2). These very large flows were accompanied by temporary back and forth movements and return migration (Anghel 2013). Both micro-level evidence from surveys (Martin and Radu 2012) and aggregate data (Ambrosini et al. 2013), suggest that for Romania as well as other East and Central European countries, return migration is a substantial share of total gross migration flows. In Romania at the level of 2008, the share of returnees in the total working age population was about 10 per cent (Martin and Radu 2012).

The Romanian migration to Italy was characterised by a negative selection: most migrants were less skilled, already had a longer migration history, often involving informal or illegal employment spells, and made use of network ties established in their communities of origin (Anghel 2013; Elrick and Ciobanu 2009). There were notable peaks over the last decade. Most of these correspond to past regularization

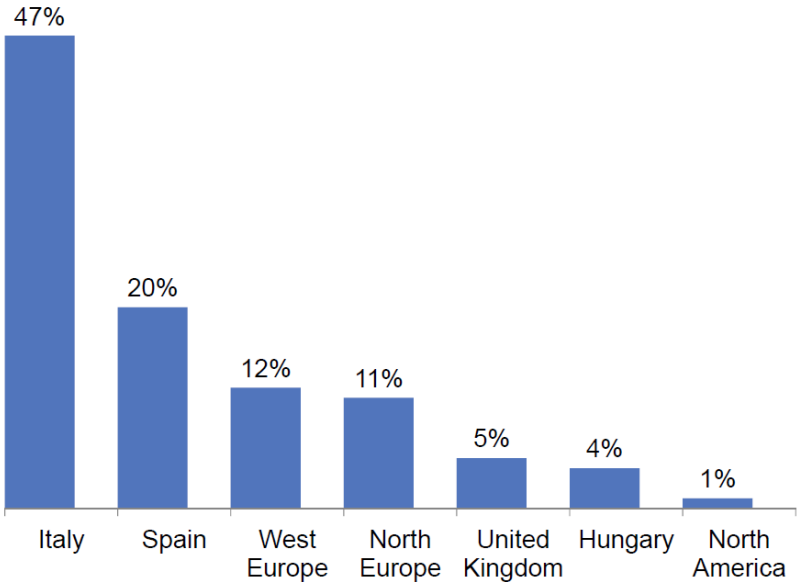



Figure 5.2: Romanian migrants abroad at the level of 2011 (Source: INS census data). West Europe includes: France, Belgium, Portugal, Austria. North Europe includes: Germany, Sweden, Denmark, Norway, Netherlands, Ireland. N=363,000 valid observations.

programmes. Fasani (2010) uses an NGO database to analyze the main features of undocumented migration in Italy[1]. Figure 5.3 indicates that the year 2007 was also a peek year in term of net migration, with registered flows double in size compared to the year before. The stock of Romanians in Italy grew thus by about 100 per cent in 2007 only (according to OECD SOPEMI 2009 figures, 760,000 Romanian citizens resided in Italy by 2008). An increase of this magnitude is most probably cased mainly by statistical reasons: Romanian migrants who resided in Italy before January 2007 could regularize their status under the free movement of labour in the EU after Romania joined the EU. However, due to its sheer magnitude and its visibility in statistics and public debates, this sharp increase in the official number of Romanian migrants is likely to have led to strong anti-immigration sentiments.

### 5.2.2 Media, attitudes and immigration in Italy

Between 1990 and 2010 the overall share of the foreign-born residents in Italy grew dramatically, from 0.8% in 1990 to more than 7% in 2010. This strong increase in a relative short period of time was accompanied by fears and anti-immigrant attitudes among the native population. In 2007, Italians where overwhelmingly considering immigration as a big problem in their country and that migrants from both the Middle East and North African and from Eastern Europe were having a bad impact on their country (Horowitz 2010). Data from the PEW Global Attitudes Survey

[1]See also Reyneri (1998) for a discussion of previous regularisation programmes in Italy.

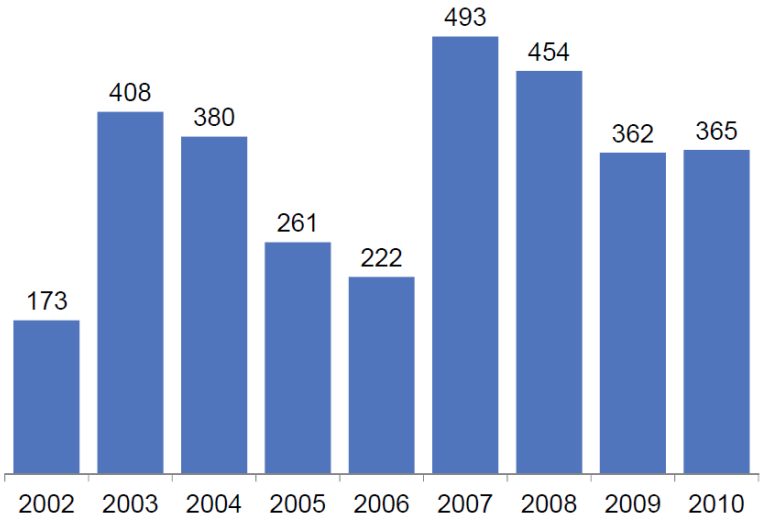



Figure 5.3: Net migration to Italy (Source: Istat)

suggest that at the level of 2007 (the data were collected before the events upon which we focus in this paper) Italians were on average the strongest supporters of tightening immigration controls among all European countries (Figure 5.4): 87 per cent were in favour of tightening migration controls, compared to "only" 77 per cent in Spain and 75 per cent in the UK, the other two countries which received massive inflows of labour migrants from Eastern Europe.

Our own estimates based on data from the Flash Eurobarometer 257/2009 (see Figure 5.5), support this finding indicating that Italians consider migration (free movement of persons) to be one of the most problematic issues when it comes to (future) EU enlargements. This strong opinion on migration in relation to EU enlargement is shared with citizens of the UK, another main destination country of migration flows from Eastern Europe after the Eastern enlargement of the EU. The same holds true when it comes to opinions on the relationship of migration and crime. According to the figures of the Transatlantic Trend Survey on Immigration in 2008, about one third of the respondents in UK and Italy agreed strongly to the statement that immigration in general will increase crime in their society. On average, only 22 per cent of European and 25 per cent of US respondents shared this pessimistic view. In addition to this the figures of the Transatlantic survey suggest, that the broad majority of Italians (68 per cent) think that most immigrants are residing illegally in Italy. For comparison, only 15 per cent of the German and 34 per cent UK respondents think in a similar way about the migrants in their country.

Against this background, it is easy to understand how a widely publicised crime committed by a Romanian migrant can fuel a national press campaign and trigger a public outrage against Romanian migrants living in Italy.

The immigration-crime nexus is a contentious issue in the Italian media. During

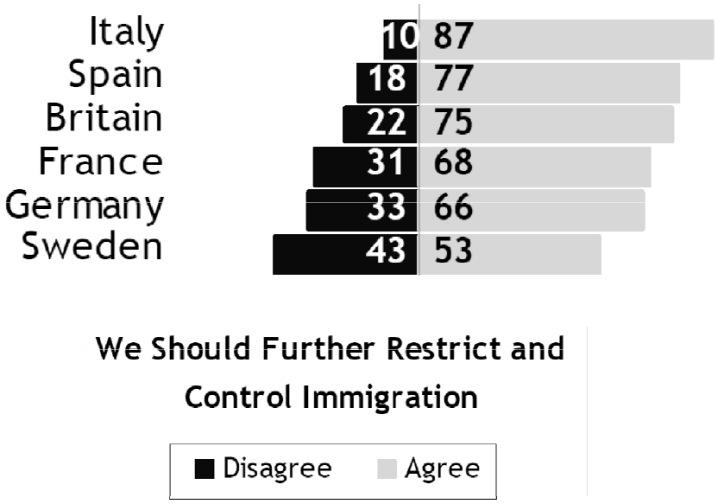



Figure 5.4: Attitudes towards tighter immigration controls (Source: PEW Global Attitudes Survey, 2007)

the period around 2007, 60 per cent of news related to any form of crime had an immigrant as protagonist (Morcellini coord. 2009). The coverage of immigration was related in 36 percent of the news to terrorism and criminality and in other 36 per cent to illegal migration (Morcellini coord. 2009). The TV is the most used medium and represents the exclusive source of information for a large proportion of the population (D'Avanzo 2007, CENSIS 2007). The media in Italy is historically highly polarised (Hallin and Mancini 2004) and characterised by partisan bias (Durante and Knight 2012). The Italian TV was characterised by a duopoly between the public service broadcaster RAI and the media network controlled by former prime-minister Silvio Berlusconi. Particularly during the period around 2007, the two networks differed considerably in the way they represented immigration in Italy. During this period, the Prodi II Cabinet (2006-2008) governed Italy supported by coalition of the entire parliamentary left wing. Berlusconi did not control the public broadcaster RAI, like he did after his return to office in May 2008. Matrorocco and Minale (2015) provide an excellent analysis of the impact of media on crime perception in Italy after 2007. They do not distinguish between Mediaset and Rai in their study and cover mainly the representation of crime not the crime-migration nexus. But they suggest implicitly that during our period of interest around 2007, compared to the periods immediately before and after, the two networks were more likely to differ in the representation of crime - precisely because Berlusconi had less influence over the Rai network during this period.

The RAI channels (Rai1, Rai2, Rai3) abide to a public service mission and attempted to cover themes around race, immigration and diversity in a balanced way. Themes around diversity or addressing problems from the perspective of migrants hardly featured in any Mediaset programmes. These are more leaning towards the

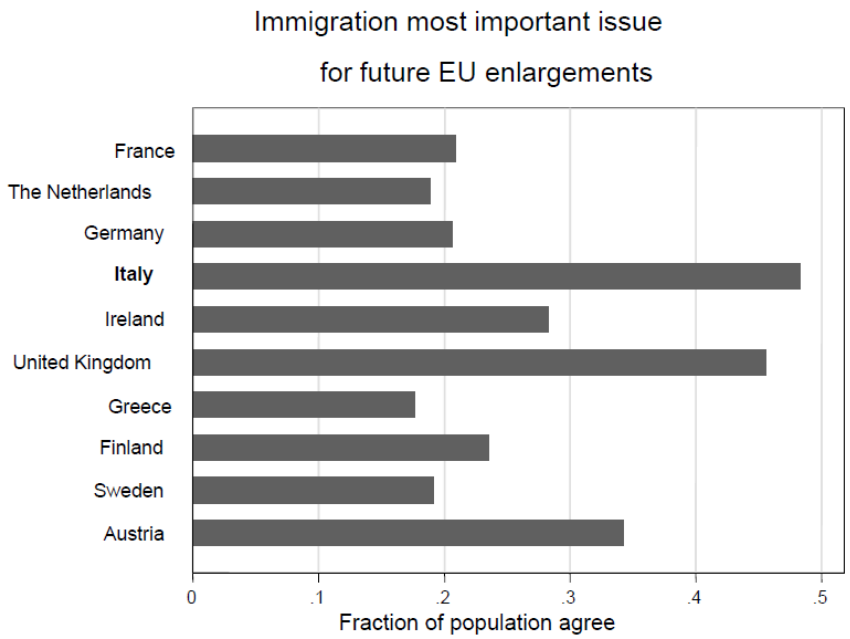



Figure 5.5: Attitudes towards immigration and EU enlargement (Source: own presentation, data from Flash Eurobarometer 257/2009)

ideological right and use a more pronounced stereotyping perspective on immigration. Only RAI channels devoted transmission time to immigration specific programmes: 93 percent of this time was on Rai2 and 7 percent of it on Rai3 (Morcellini coord. 2009). The Mediaset channels (Rettequattro, Canale cinque, Italia Uno) devoted two times more prime transmission time than RAI to crime and security issues (Durante and Knight 2012) often linked to crimes committed by immigrants or to illegal immigration (Diamanti 2008). The Mediaset news programmes "telegiornali" (TG4, TG5 and Studio Aperto) covered 60 percent more news on crime and migration than their RAI counterparts taken together (TG1, TG2 and TG3). Our empirical analysis confirms this divide between RAI and Mediaset. Romanian migrants using Mediaset channels for information on Italy are significantly more likely to consider media reports on immigration as tendentious, compared to those watching RAI channels (we present our data in Section 5.3.1 and the comparison for the variable "Media tendentious" in Table 5.1 ).

### 5.2.3 The "Tor di Quinto" events

Compared to the first semester of 2007, the number of news on migration and crime increased dramatically on both networks. On RAI news programmes it almost doubled, from 888 to 1400 (Diamanti 2008). The reason for this was a crime committed on October the 30th 2007 by a Romanian migrant of Roma origin. He robbed and savagely beat an Italian woman, the wife of a navy officer who was returning home

along a poorly lit road in the Tor di Quinto periphery of Rome. The victim subsequently died in hospital.

This incident appeared to be the "final straw that resulted in an explosive debate on safety and security in Italy, coinciding with the presentation by the government of its Security Package on 30 October" (Sartori 2008). The case spurred an unprecedented negative public reaction against Romanian immigrants. At the same time, the media reaction went well beyond the specific case both in Italy (generating a debate around the so called 'Romanian emergency') as well as in Romania, having European wide echoes in the press (not only via the TV but also in the print media e.g. the headline of Corriere della Sera: 'The spectre of monsters from Europe: Is the Romanian bogeyman destined to become Italians' nightmare?).[2]

Only three weeks later, the Italian government passed a decree to allow the police and judiciary to expel immigrants who are deemed to be a threat to public order. Then opposition leader Silvio Berlusconi urged Italy to close its borders to Romanian workers and his conservative ally called for the expulsion of tens of thousands of immigrants. The crisis brought at that time the Romanian Prime Minister to Rome for an emergency meeting with his Italian counterpart.

What singled out this decree and shocked the public opinion was that it aimed so openly at Romanians leading to the "securitization" (Boswell 2007) of the debate on Romanian migrants in Italy. Its preamble claimed that "the proportion of crimes committed by foreigners has increased, and those who commit most crimes are the Romanians." Newspapers reported this to be true only in absolute terms, Romanians being the most numerous group of migrants in Italy, but not in relative terms. La Stampa's own analysis finds that the proportion of Romanians reported to, or arrested by, the police in 2006 was lower than in most other foreign groups.

There were some voices raised against the decree. These included the Pope warning against racism and paranoia in Italy and the head of Italy's criminal lawyer's association who initiated a protest against the emergency decree. The number of actual deportations is not available, but during the month following the Tor di Quinto events, less than 200 deportations were reported, in contrast to the 200,000 demanded by Fini and the 20,000 promised by the government. While the policy reaction remained at the level of rhetoric, the public reaction via discourses, media and general attitudes was massive. Since the at that time suspect was of Roma origin and resided

[2]Specifically dealing with the Tor di Quinto events and their aftermath, some selected headlines from across the major international press include:
"Italy starts deporting Romanians", *BBC-News*, 05.11.2007
"Italian woman's murder prompts expulsion threat to Romanians", *The Guardian*, 02.11.2007
"Brutal Attack in Rome: Italy Cracks Down on Immigrant Crime Wave", *Der Spiegel*, 02.11.2007
"Rome veut d'urgence expulser les immigrés délinquants", *Le Figaro*, 05.11.2007
"Italy: Prodi Defends Expulsions of Romanians", *AGENCE FRANCE-PRESSE*, 06.11.2007
"Italy and immigration: Disharmony and tension", *The Economist*, 08.11.2007
"Romanian Premier Tries to Calm Italy After a Killing", *The New York* Times, 08.11.2007

in a temporary Roma camp, the wave of hatred was target against this group, but also led to a backlash against Romanians in general.

In these circumstances, it seems worth while to try to analyse the impact of such a shock in public attitudes on the return intentions of Romanian migrants. We use in our motivation the shock as it was reflected by the media. But there was a remarkable change in individual attitudes over this period depicted in the repeated survey of the Fondazione Unipolis, Demos and Pi on security issues and perceived threats in the population. The second semester of 2007 is the single period in which negative attitudes on immigration in Italy ("immigration poses threat to public order and security") prevail over the perceived positive effects of migration and diversity ("the presence of migrants enriches the cultural development of Italy") while the opposite is the case for all waves before and after this period (Diamanti 2008).

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## 5.3 Data and method

### 5.3.1 The RCI survey

Our analysis relies on data from a broad-purpose survey covering the Romanian Community in Italy (RCI). The survey was commissioned by the Romanian government through the Agency for Government Strategies ("Agenţia pentru Strategii Guvernamentale"). It aimed to gather accurate and detailed information on the situation of Romanian migrants residing in Italy after Romania joined the EU. A single wave of interviews was carried out in the period 20 November to 15 December 2007 on a country wide representative sample of about 1,100 Romanian migrants (over 18 years of age and excluding short term seasonal migrants and tourists).

For the RCI survey, a two-stage sample design was used to select regions and four types of local administrative units ("comuni") based on the number of Romanian migrants. This sampling frame was constructed using Istat data on the distribution of Romanian migrants across Italian regions, localities and neighborhoods. Regions

with a very small number of Romanian migrants were not sampled[3], questionnaires being eventually distributed in fifteen regions and sixty "comuni". The majority of migrants were sampled from the main destination regions of Romanian migrants in Italy: Lazio (28 per cent), Lombardy (18 per cent), Veneto (17 per cent) and Piedmont (11 per cent). The rest were split among the other regions according to the Istat data on the ratio of Romanian migrants. About 25 per cent of the interviewed migrants resided in big cities: Rome (10.5 per cent), Torino (8.5 per cent) and Milano (6 per cent). The other were evenly distributed among medium sized, smaller towns and rural areas. Within neighbourhoods, blocks of buildings and households were selected randomly and the persons interviewed were sampled using a date of birth criterion. No more than five persons were included from the same street and no more than two from the same block.

The RCI survey gathered detailed information on socio-demographic characteristics, migration biographies, employment in Italy, ties to the region of origin in Romania, social interactions in the Romanian community and with the Italian society, general life satisfaction, and several questions covering migration plans. These include: settlement plans in Italy, intentions to return to Romania or to move onwards to a third destination country.

Fortunately for the purpose of our study, the RCI survey was carried out 3 to 5 weeks after the "Tor di Quinto" events, after the peak of the media scandal and after the debates around the emergency decree for the immediate expulsion of citizens of other European Union countries. It was therefore possible to include an additional battery of questions in the RCI survey to cover the perception of and reaction to recent developments in the aftermath of the "Tor di Quinto" events. In particular, the RCI survey contains retrospective information on the perception of the socio-economic situation in Italy and Romania as well as on outmigration intentions. With respect to the latter, we make use of a question which asks whether the participant revised his/her settlement intention following the "Tor di Quinto" events.[4] We combined this measure of revised settlement intentions with a question on current settlement plans[5] to construct a time varying measure of settlement intentions. The fact that the "Tor di Quinto" events happened only 3 to 5 weeks before the interview should foster a good perception of current and past settlements intentions. In other words, the recall bias should be very limited. The corresponding variable is a dummy coded as one if a respondent plans to settle in Italy on a long term basis and has no concrete plans to either return to Romania or move to a third destination. This

[3]These are: Basilicata, Calabria, Molise, Puglia, Valle D'Aosta.

[4]The exact question is: "Did you revise your settlement intention as a result of the 'Tor di Quinto' events"?

[5]"Do you intend to settle in Italy on a long term basis without migration plans in the next two years?".

allows us to identify changes in migration plans by comparing settlement intentions before and after the "Tor di Quinto" events.[6]

A similar approach has been used before by Friebel, Gallego, and Mendola (2013). They combine survey data on current migration intentions with retrospective information on past migration intentions (1 year earlier) to study the change in migration intentions of Mozambicans in reaction to xenophobic violence in South Africa. The use of retrospective information on migration has a long tradition in social science. Among others, Pissarides and Wadsworth (1989) have used a retrospective question in the UK Labour Force Survey to identify internal migrants in the United Kingdom. McKenzie and Rapoport (2007) have exploited retrospective information in Mexican survey data to identify migrants to the US. A more recent example is the work of Mezger Kveder and Beauchemin (2014) who have studied the impact of migration on home country investment using retrospective questions to measure migration periods of Senegalese respondents in the "Migration between Africa and Europe" survey.

What makes the RCI data particularly interesting for our research are the detailed questions on media consumption. These include the main sources used for information about current affairs in Italy, the exact names of the main TV channels and the frequency of use. The survey allocated a special weight to this section because it initially aimed at covering the formation of attitudes among Romanian migrants in relation to the overwhelmingly bad press they faced in host countries across Europe. All respondents indicate to have been using the TV as source of information on current affairs in Italy. More than ninety per cent mention it as the single main source and use the TV daily or more times a week.

These questions allow us to identify migrants who were exposed to the Mediaset channels and those who used instead the state TV (RAI) as their source of information about Italy before the Tor di Quinto events. The survey question we use is: "Name the main TV channel you have been using as source of information on Italy". The question is asked about TV habits not related to the Tor di Quinto events but to the usual, long-term media preferences. We cannot entirely rule out that immigrants changed their main Italian TV-channels after the events. But this does not affect our identification strategy or the estimated impact as long as the answers do not suffer from systematic recall bias. Also, inertia in TV consumption patterns observed in other studies reassure us that short-term changes in TV behaviour such as the choice of the main channel are unlikely to bias significantly our results. We assign respondents into the two groups using the channel identified by respondents as the primary source of information. Among those respondents using the state TV channels, about 67 per cent used RAI 1, 27 per cent RAI 2 and only 6 per cent RAI

[6]The RCI survey includes a few additional retrospective questions related to the perceptions of respondents when they arrived in Italy. We use the questions to test the validity of our empirical identification strategy in Section 5.

3. Among the Mediaset users, the majority chose Canale 5 (43 per cent) or Italia 1 (25 per cent), followed by Rete 4 (7 per cent) and an even split over the remaining Mediaset channels.

| | Group | | | | |
|---|---|---|---|---|---|
| | Without Mediaset exposure | | With Mediaset exposure | | |
| | mean | s.d. | mean | s.d. | Difference |
| Variable | (1) | (2) | (3) | (4) | (1) - (3) |
| Age | 33.281 | (9.256) | 32.060 | (8.703) | 1.221** |
| Woman | 0.430 | (0.496) | 0.432 | (0.496) | 0.002 |
| Low education | 0.150 | (0.357) | 0.106 | (0.308) | 0.044** |
| Medium education | 0.672 | (0.469) | 0.791 | (0.406) | 0.118*** |
| High education | 0.176 | (0,381) | 0.102 | (0.303) | 0.021*** |
| Ethnic Roma | 0.119 | (0.324) | 0.084 | (0.278) | 0.034* |
| Informally employed | 0.343 | (0.475) | 0.235 | (0.424) | 0.108*** |
| Log wage / month | 5.281 | (0.419) | 5.342 | (0.476) | 0.060* |
| Hours work / day | 8.179 | (1.717) | 8.342 | (1.468) | 0.163 |
| HH income / month | 1663.292 | (1008.958) | 1774.420 | (1079.339) | 111.128 |
| Years in Italy | 3.809 | (3.162) | 4.547 | (3.345) | 0.738*** |
| Fluent in Italian | 0.699 | (0.459) | 0.755 | (0.431) | 0.056** |
| Minority religion | 0.166 | (0.373) | 0.195 | (0.396) | 0.028 |
| Overall trust | 4.743 | (2.189) | 4.802 | (2.126) | 0.060 |
| Negative Roma | 0.687 | (0.464) | 0.759 | (0.428) | 0.072*** |
| Don‘t migrate | 0.487 | (0.500) | 0.376 | (0.485) | 0.111*** |
| Worsening opinion | 0.717 | (0.451) | 0.681 | (0.467) | 0.036 |
| Media tendentious | 0.573 | (0.495) | 0.647 | (0.479) | 0.073** |
| Deportation justified | 0.393 | (0.489) | 0.442 | (0.497) | 0.049 |
| No Italian contacts | 0.628 | (0.484) | 0.610 | (0.488) | 0.018 |
| Poor health | 0.177 | (0.382) | 0.139 | (0.346) | 0.038* |
| Tied migrant | 0.048 | (0.214) | 0.066 | (0.249) | 0.018 |
| Migration negative | 0.641 | (0.480) | 0.687 | (0.464) | 0.046 |
| Roma neighbor | 0.156 | (0.363) | 0.080 | (0.272) | 0.075*** |
| Annual remittances | 1668.214 | (2966.224) | 1541.694 | (2585.070) | 126.521 |
| Owns house in Ro. | 0.423 | (0.494) | 0.396 | (0.489) | 0.027 |
| Owns land in Ro. | 0.320 | (0.467) | 0.269 | (0.444) | 0.051* |
| Share foreign born[1] | 6.409 | (1.446) | 6.577 | (0.931) | 0.169** |
| Share Ro. migrants[1] | 24.049 | (10.306) | 25.798 | (10.041) | 1.749*** |
| Unemployment rate[1] | 4.769 | (2.167) | 4.365 | (1.480) | 0.404*** |
| Observations | 565 | | 498 | | |

Notes: The table reports mean values of the descriptive variables for those with and without exposure to Mediaset controlled media. Significance levels correspond to two-tailed t-test of the equality of the means for the two groups.

* signigicant at 10%; ** at 5 %; and ***at 1%

[1] refer to regional characteristics in Italy for 2007 provided by Istat.

Table 5.1: Characteristics of Romanian migrants in Italy

In Table 5.1 we compare the main characteristics for respondents with and without exposure to Mediaset channels. We selected these variables using the standard framework of a human capital (return) migration model and included also some additional regional characteristics.[7] In contrast to settlement intentions, which serves as our dependent variable, all covariates refer to the time of the interview (i.e. after the "Tor di Quinto" events) and do not vary over time. The t-tests included in the last two columns of Table 5.1 indicate that the two groups are not only similar in size, but also are comparable with respect to many individual characteristics like gender, household income, work effort, attitudes towards the situation and perception of Romanian migrants in the Italian society. There are also no statistically significant differences between the two groups with regard to variables we expect to be highly correlated with return migration: remittances, integration in Italy (having or not Italian friends), to be or not a tied migrant (family migration decisions), religious affiliation (documented to be a strong predictor of migration and return due to specific network ties in Romania and abroad) and house ownership in Romania. Migrants exposed to Mediaset channels are more likely to be younger, to have been residents in Italy for longer periods, to be on average slightly more fluent in Italian, and less likely to be informally employed. They are also more likely to consider that the Italian media reacted in a tendentious way to the "Tor di Quinto" events. However, with regard to the selection into media exposure based on education there is no clear pattern. Mediaset exposed migrants are at the same time less likely to have only a low level of education and to be highly skilled compared to migrants who were not exposed to Mediaset channels. As a consequence they are significantly more likely to have a medium level of education. We will control for all these observable characteristics in the various specifications of our regression based difference-in-differences models. But the otherwise rather neutral selection into media exposure is worth noting and important for the discussion of our results.

### 5.3.2 The Difference-in-Differences approach

One reason why migrants choose either of the two types of television channels can be due to different preferences making them more likely to consume mass media with a specific content. However, based on the perceptions about Italy facilitated by the media, they will also form expectations with regard to their optimal migration and integration strategies and the constraints they might face in the host society. Given the potential self-selection into the type of media migrants consume, we have no a priori expectations about the correlation between the frequency of anti-immigrant expressions in the chosen media and the intended duration of stay in the destination

[7] A detailed description of the variables can be found in Table A1 in the Appendix.

country. The RCI data suggest a small difference between migrants exposed to Mediaset and those exposed to the state TV - the former being slightly less likely to have settlement intentions in Italy (see Table 5.2), but the difference is not statistically significant ($t = 0.654$).

However, we would expect migrants exposed to different media to react in different ways to a shock in public attitudes of the magnitude reached after the Tor di Quinto events.

Migrants who use Mediaset controlled TV channels as their main source of information are more frequently exposed to anti-immigrant sentiments and used to the stereotyping attitudes propagated by this media. We expect them to be therefore less likely to react to the shock in attitudes after 30.10.2007 as their counterparts who used other TV channels as main source of information in Italy. We define the group exposed to Mediaset channels as our control group. For those who did not use Mediaset channels, the Tor di Quinto events and the reaction afterwards came as a massive shock. They are our treatment group because they were not exposed to negative attitudes from Italians before "Tor di Quinto". This definition of treatment and control groups informs our baseline difference-in-differences approach.

By exploiting this variation in media consumption among Romanian migrants, our intention is to establish a causal link between changes in public attitudes and settlement intentions. The validity of our approach is based on the assumption that, other things being equal, the trend in settlement intentions in the group of migrants who are exposed to the Mediaset channels will be the same as among those who are not exposed. The common trend assumption would therefore imply that the settlement intentions in each of the two groups were moving in a parallel way before the shock. Due to the limitations of our data, we cannot directly test for the validity of this assumption. We do however assume that individuals in the control group would always have slightly lower settlement intentions than individuals in our treated group and, more importantly, that this difference between treatment and control group ($\Delta$ settlement) would be constant across time, e.g. at various points in time, $t-5$, $t-4$, $t-3$, $t-2$, $t-1$ $\Delta$ settlement would be the same, with $t = 30$ *October* 2007, and $-1, -2 \ldots$ being months or years before.

Besides the raw difference-in-differences estimation presented in Table 5.2 and discussed in the next section, we also assess how robust these are to the introduction of control variables. In order to do this we estimate a probit equation of the type:

$$\begin{aligned} P\left(\text{settlement}_{it} = 1\right) = \Phi[&\alpha + \beta \cdot Z_{it} + \gamma_0 \cdot \text{No mediaset exposure}_i \\ &+ \gamma_1 \cdot \text{post"}\textit{Tor di Quinto}\text{"}_t \\ &+ \gamma_2 \cdot (\text{No mediaset exposure} \times \text{post"}\textit{Tor di Quinto}\text{"})_{it}] + \varepsilon_{it} \end{aligned} \tag{5.1}$$

where $\text{settlement}_{\text{it}}$ is a dichotomous variable taking the value one if the respon-

| Media consumption | Before Tor di Quinto (1) | After Tor di Quinto (2) | Diff. (2) −(1) (3) | Diff.-in-diff. (4) |
|---|---|---|---|---|
| *Treated group* | | | | |
| Non-Mediaset $[N = 1,130]$ | .663 (.020) | .463 (.021) | -.200 (.029) | |
| *Control group* | | | | |
| Mediaset $[N = 996]$ | .644 (.021) | .542 (.023) | -.102 (.032) | -.098 (.043) |

*Notes:* The table reports mean intentions to settle in Italy of Romanian migrants. Intention to settle equals one if migrants plan to stay in Italy on a medium to long term asis and have no concrete plans to return during the next twelve months. N includes two observations (one pre one post) for n=1,063 Romanian migrants. Standard errors in parentheses.

Table 5.2: Intentions to settle (no return plans) in Italy of Romanian migrants

dent i plans to stay in Italy at time t. $Z$ is a vector of personal characteristics (in our data most of them time invariant), while No mediaset exposure$_i$ is a dummy variable taking the value one if the respondent does not use Berlusconi owned Mediaset programs as the main source of information and post"Tor di Quinto" takes the value one for the time after 30.10.2007. The coefficient for the interaction of these two dummy variables, $\gamma_2$ is of interest for our analysis but its magnitude does not represent the partial effect. We therefore estimated the predicted response in settlement intentions for those who were not exposed to Mediaset channels at the means of the covariates and report this in the last row of Table 5.3.

## 5.4 Discussion of the results

We present some prima facie evidence on the impact of the "Tor di Quinto" events on settlement intentions of Romanian migrants in Table 5.2. This includes the unconditional differences in average settlement intentions in Italy before and after the events for our treatment and control groups, as well as the simple difference-in-differences (DiD).

Our treatment group are all Romanian immigrants who are following the news through media non-affiliated with the Berlusconi press (non-Mediaset). As already mentioned, our assumption is that those media channels projected a more balanced picture of the impact of immigration on Italy. Immigrants who followed those media were therefore not exposed to very negative views from the national media towards themselves before the "Tor di Quinto" events. We find that those immigrants ex-

pressed a greater tendency to settle in Italy before the events (the p-value on the difference is 0 up to the fourth decimal point). Quite striking is the reduction in those intentions to settle following the "Tor di Quinto" events. Around a third of immigrants in this group revised their intention to settle (i.e. a reduction of 20 percentage points from .66 to .46) and expressed intentions to return in their origin country or to move on to third destination countries. This reduction exceeds by far the reduction in settlement intentions amongst Romanian immigrants who were used to negative views on immigration through media (i.e. our control group). Immigrants who were regularly using the Berlusconi media did indeed also reduce their intention to settle but by far less than our treated sample. Only 15 per cent changed their mind after "Tor di Quinto". One obvious interpretation of these results is that the shock caused by the huge media coverage of the events was much greater for immigrants who were not accustomed to being stereotyped and portrayed in non-favourable light. This is a potentially important and interesting result showing for the first time the size of the impact that media can have on intentions to settle. The difference-in-differences indicates a reduction of 9.8 percentage points and significantly different from nil (p-value= .021). The size of the corresponding impact on intentions to settle in Italy equals 14 per cent.

| Variables | Full sample: Romanian Migrants in Italy | | | | |
|---|---|---|---|---|---|
| | Without covariates (1) | Demographic characteristics (2) | Integration in Italy (3) | Migration characteristics (4) | Regional characteristics (5) |
| Age | - | -0.011 (0.003) | -0.011 (0.003) | -0.007 (0.004) | -0.011 (0.004) |
| Woman | - | 0.083 (0.056) | 0.069 (0.058) | 0.055 (0.059) | 0.052 (0.063) |
| Medium education | - | 0.081 (0.087) | -0.051 (0.091) | -0.030 (0.092) | 0.049 (0.102) |
| High education | - | 0.283 (0.110) | 0.118 (0.116) | 0.121 (0.118) | 0.267 (0.131) |
| Ethnic Roma | - | 0.103 (0.096) | 0.157 (0.101) | 0.143 (0.103) | -0.006 (0.115) |
| Informally employed | - | - | -0.217 (0.065) | -0.194 (0.065) | -0.131 (0.072) |
| Wage last month | | | -0.002 (0.002) | -0.002 (0.002) | -0.002 (0.002) |
| Years in Italy | | | 0.007 (0.003) | 0.007 (0.003) | 0.007 (0.003) |
| Fluent in Italian | - | - | 0.227 (0.067) | 0.203 (0.068) | 0.188 (0.073) |
| Minority religion | - | - | -0.133 (0.075) | -0.087 (0.076) | 0.079 (0.096) |
| Overall trust | - | - | 0.010 (0.013) | 0.003 (0.014) | 0.019 (0.015) |
| Negative to Roma | - | - | 0.112 (0.067) | 0.127 (0.068) | -0.032 (0.076) |
| "Don't migrate to Italy" | - | - | -0.356 (0.058) | -0.346 (0.059) | -0.325 (0.064) |
| Not discriminated | - | - | 0.206 (0.061) | 0.176 (0.063) | 0.098 (0.070) |
| Attitudes worsening | - | - | 0.243 (0.065) | 0.267 (0.066) | 0.314 (0.071) |
| Media tendentious | - | - | 0.023 (0.059) | 0.024 (0.059) | -0.135 (0.065) |
| Deportation justified | - | - | 0.058 (0.060) | 0.026 (0.061) | 0.006 (0.068) |
| No Italian contacts | - | - | -0.072 (0.062) | -0.055 (0.061) | -0.021 (0.067) |
| Poor health | - | - | - | -0.229 (0.081) | -0.140 (0.086) |
| Tied migrant | - | - | - | 0.319 (0.130) | 0.169 (0.140) |
| Negative to migration | - | - | - | -0.134 (0.063) | -0.088 (0.070) |
| Owns house in Romania | - | - | - | -0.122 (0.064) | -0.089 (0.070) |
| Owns land in Romania | - | - | - | -0.100 (0.064) | -0.077 (0.069) |
| Region Italy | - | - | - | - | Yes |
| Region Romania | - | - | - | - | Yes |

| | | | | | |
|---|---|---|---|---|---|
| No mediaset exposure ($\gamma_0$) | 0.052 (0.079) | 0.050 (0.080) | 0.128 (0.082) | 0.137 (0.083) | 0.225 (0.088) |
| Post ($\gamma_1$) | -0.514 (0.076) | -0.518 (0.076) | -0.539 (0.077) | -0.545 (0.078) | -0.596 (0.081) |
| Post $\times$.No mediaset ($\gamma_2$) | -0.249 (0.111) | -0.251 (0.111) | -0.260 (0.113) | -0.262 (0.113) | -0.282 (0.118) |
| Constant | 0.423 (0.054) | 0.710 (0.145) | 0.535 (0.185) | 0.656 (0.200) | 1.119 (0.350) |
| Observations | 2,126 | 2,126 | 2,120 | 2,120 | 2,058 |
| Log likelihood | -1418 | -1407 | -1354 | -1341 | -1227 |
| *Predicted settlement response for no Mediaset exposure* | *-0.092 (0.043)* | *-0.097 (0.043)* | *-0.101 (0.044)* | *-0.102 (0.044)* | *-0.110 (0.046)* |

Notes: The dependent variable is settlement intentions in Italy. It equals one if migrants plan to stay in Italy on either medium or long term basis and have no concrete plans to return during the next twelve months. Standard errors in parentheses. Post equals one for the period after the "*Tor di Quinto events*" (30.10.2007). "*No Mediaset exposure*" equals one for those who do not use Mediaset controlled channels as their main source of information about current affairs in Italy and the Italian society.
Column (5) includes dummies for the regions of residence in Italy as well as for the 43 counties representing the regions of origin in Romania.
The predicted response in settlement intentions for no Mediaset exposure is the treatment effect on the treated group, i.e. $\Phi(\gamma_0 + \gamma 1 + \gamma 2) - \Phi(\gamma_0 + \gamma 1)$. It is estimated at the means of the covariates.

Table 5.3: DiD Probit results Mediaset exposure versus no Mediaset exposure

Table 5.3 reports the results from our probit model outlined in equation 5.1. The first column in Table 5.3 re-produces the coefficient reported in Table 5.2. In column 2, we add the socio-demographic controls available in our data set. We observe that the coefficient of interest tends to increase slightly and remains highly significant. In columns (3) to (5) we introduce more variables that can potentially reverse or affect the tendency to settle in the host country. The addition of variables capturing links to the Italian society as well as the migrants' own perception of native attitudes and of the media reaction (column 3) tends to increase slightly the main coefficient of interest. The same holds true if we control for additional migration characteristics (column 4) like the type of migration (tied migrant), household links to Romania (land and house ownership) as well as the migrants' revealed own views on the impact of migration. Adding regional fixed effects, controlling for regions of origin in Romania and regions of residence in Italy, tend to further increase the main coefficient of interest and the corresponding predicted response in settlement intentions. Overall, the addition of a large number of control variables does not greatly affect the value and significance of coefficients. Our preferred estimate of the response in settlement intentions is .11 per cent, with a standard-error of .046 and consequently a p-value of .017. This means that intentions to settle have decreased amongst the Romanian immigrants following the media coverage of "Tor di Quinto" by 11 percentage points with a base value of 66 per cent, i.e. an impact of almost 17 per cent.

## 5.5 Extensions and falsification tests

The nature of selection into return migration is of crucial importance for the long term developmental impact of migration on the sending countries. We are therefore particularly interested in whether the impact of native attitudes on settlement intentions is random or if it affects the selection of return migrants.

In order to investigate this, we need to find the partial effects on sub-groups based on education, age, Italian language fluency and labour market experience proxied by years since migration in Italy. We estimate therefore probit models similar to that from equation 5.1 but incorporating triple interaction terms (DDD) with dummy variables which define the sub-group of interest:

| | | Regression DiD | |
|---|---|---|---|
| | No covariate | Demographic indicator | Regional indicators |
| | (1) | (2) | (3) |
| *Baseline treatment group* | | | |
| No mediaset×post×low educ. | -.133 | -.132 | -.138 |
| | (.061) | (.060) | (.061) |
| No mediaset×post×med. educ. | .083 | .088 | .093 |
| | (.097) | (.102) | (.105) |
| No mediaset×post×high educ. | .016 | .034 | .046 |
| | (.127) | (.137) | (.138) |
| No mediaset×post×language | .037 | .041 | .120 |
| (fluent in Italian) | (.094) | (.099) | (.253) |
| No mediaset×post×recent mig. | -.004 | -.023 | -.058 |
| (in Italy less than 3 years) | (.090) | (.079) | (.208) |
| No mediaset×post×over 40 | -.076 | -.074 | -.071 |
| (older than 40) | (.143) | (.138) | (.141) |

Notes: The dependent variable is settlement intentions in Italy.
Standard errors in parentheses.
The marginal effects in columns (2) and (3) are from partial interactions in probit models using third differences, calculated at means.
See also Cornelissen and Sonderhof 2009).

Table 5.4: Treatment effects for subgroups

$$
\begin{aligned}
P\left(\text{settle}_{it}=1\right) = \Phi[&\alpha + \beta \cdot Z_{it} + \gamma_1 \cdot \text{No mediaset exposure}_i \\
&+ \gamma_2 \cdot \text{post"}\textit{Tor di Quinto}\text{"}_t + \gamma_3 \cdot \text{subgroup}_i \\
&+ \gamma_{12} \cdot (\text{No mediaset exp.} \times \text{post"}\textit{Tor di Quinto}\text{"})_{it} \\
&+ \gamma_{13} \cdot (\text{No mediaset exp.} \times \text{subgroup})_i \\
&+ \gamma_{23} \cdot (\text{subgroup}_i \times \text{post"}\textit{Tor di Quinto}\text{"})_{it} \\
&+ \gamma_{123} \cdot (\text{No mediaset exp.} \times \text{post"}\textit{Tor di Quinto}\text{"} \times \text{subgroup})_{it}] + \varepsilon_{it}
\end{aligned} \tag{5.2}
$$

where all variables are the same as in (5.1) and $\text{subgroup}_i$ takes the value one if respondent i belongs to the sub-group of interest.

Table 5.4 shows the results of the sub-group analysis. It reports the estimates for education groups (low, medium and high), for language fluency (based on a constructed dummy variable indicating whether the respondents are fluent in Italian), for recent migrants (those who arrived earlier than the median number of years since migration in the sample) and age (migrants over forty years of age).

The first column in Table 5.4 present the raw difference-in-differences for the subgroups while columns (2) and (3) include covariates[8] These results were estimated

[8]In column 2 we control for socio-demographic and migration characteristics as well as for vari-

using triple interaction terms and predicting the marginal effects at the means of the covariates using third differentials. Given our interest in the implications of our results for the potential self-selection into (having intentions to) out-migration, it is worth noting that hardly any sub-group effects are statistically significant. Most effects are much smaller than our baseline results for the whole sample.

The only group for which the impact is statistically significant at 5 per cent is that for low education. After the inclusion of covariates the magnitude of the effect for this group is above the one estimated for the whole sample being 13 percentage points, with a corresponding p-value of .03. In other words, low educated migrants were decreasing their intentions to settle in Italy on a medium to long term basis by 13 percentage points which given the base value of 70 per cent in the group, suggest a reduction of settlement intentions by about 20 per cent. The implications for the selection into settlement and out-migration are straightforward. The implied positive selection into settlement means that without accounting for out-migration any predictions of the integration prospects of migrants in Italy will be biased upwards. Even if out-migration intentions are not realized, those belonging to the lower educated might have less incentives to invest in specific skills or language and will face a long term disadvantage.

Moreover, the described selection pattern is likely to reduce the potential gains of return migration for the sending country. Piracha and Vadean (2010) have shown that low skilled return migrants are less likely to engage in entrepreneurial activities than skilled returners. The same holds true for failed migrants who leave the destination country before they have reached their savings goal. For the case of Egypt, Marchetta (2012) has demonstrated that migration experience also increases the survival rate of entrepreneurial activities and by this generates a long-term contribution to employment creation. The fact that return migrants are negatively selected in terms of education and leave the destination earlier is likely to reduce two main benefits of return migration: entrepreneurial take-up and sustainability of self-employment. It is also very likely to impact on the saving behavior of migrants (Piracha and Zhu 2012) and eventually on both the magnitude and the use of remittances in the home country (Piracha and Randazzo 2011).

Our data do not allow us to include a placebo period in the analysis. Since the time period we are concerned with is very short, i.e. one month before and after the Tor di Quinto events, it is highly unlikely that our difference-in-differences results are due to some other events occurring in the same period. However, we want to rule out the possibility that our estimated relationship between a shock in anti-immigrant sentiments and settlement intentions may capture omitted factors

ables measuring integration. The results in column 2 are therefore comparable with the results in column 4 of table 3.

that affect for example both the choices over media consumption and the intended duration of stay in Italy. Such factors could be related e.g. to unobserved affinity for the culture or local amenities in the destination country, or to preferences over consumption in the region of origin which affect migrants' attitudes towards the host society. We construct two types of falsification tests in order to increase the confidence that our results are not driven by such hidden biases due to omitted characteristics. First, we perform the same difference-in-differences analysis on our treatment and control groups but using a "fake" outcome, i.e. an outcome known to be unaffected by the treatment (Rosenbaum 2002). Second, we use our outcome of primary interest, settlement intentions in the destination country, but we define the treatment and control groups for the difference-in-differences analysis such that they are not affected by the shock in public attitudes. In both cases we should find no significant impacts. This would support our interpretation that the relationship between a shock in native attitudes and settlement intentions is not coincidental and unlikely to be driven by omitted variables.

We use first three sets of variables that record the perception of Romanian migrants with regard to the politico-economic situation **in Romania** before and after the events. These variables cover: (i) the overall economic conditions in Romania, (ii) the employment and labour market situation and (iii) the political context and the functioning of institutions. The change in these perceptions should not be affected by the shock in native attitudes. For all three variables, we run the same models as in equations (5.1) and (5.2) using the same controls but the perception variables as "fake" outcome. The results are reported in Table 5.5 for both the DD effects (first row) and the subgroup effects using third differences (DDD). None the effects is statistically significant.

This means that in terms of outcomes that could not reasonably be caused by a shock in native attitudes, our treatment and control groups are not statistically different, which is what we would expect had the media exposure been assigned at random.

Similarly, for the second set of tests, we change the definition of our treatment using those who have negative perceptions on the situations in Romania as our "fake" control group and those with neutral or positive perceptions as treatment while keeping our main outcome of interest (settlement intention in the host country). The main rational here is that people who have negative opinion on their origin country should not revise their settlement intention following the Tor di Quinto event in comparison to those who have no such negative opinions about their origin country. All three outcomes (i.e. overall economy, labour market and political context) measuring negative perceptions of the situation in Romania are positively correlated to settlement intentions. We run again the same models as in equations (5.1) and (5.2) but using

| | Overall economic conditions (1) | Employment / labour market conditions (2) | Overall political conditions (3) |
|---|---|---|---|
| *dependent variable: negative perception of situation in Romania* | | | |
| *treatment group: without Mediaset exposure* | | | |
| *control group: with Mediaset exposure* | | | |
| No mediaset×post | .014 | .025 | .059 |
| | (.033) | (.024) | (.039) |
| No mediaset×post×low. educ. | .040 | -.023 | .043 |
| | (.046) | (.049) | (.079) |
| No mediaset×post×med. educ. | .058 | .029 | .058 |
| | (.051) | (.050) | (.051) |
| No mediaset×post×high educ. | .130 | .003 | .045 |
| | (.144) | (.063) | (.105) |
| No mediaset×post×language | .080 | .021 | .080 |
| (fluent in Italian) | (.074) | (.055) | (.074) |
| No mediaset×post×recent mig. | .003 | .012 | .004 |
| (in Italy less than 3 years) | (.053) | (.043) | (.053) |
| No mediaset×post×over 40 | -.036 | -.006 | .114 |
| (older than 40) | (.070) | (.055) | (.085) |

Notes: The dependent variable takes the value one if the perceptions on the evolution of economic conditions, the labour market situation and the political context in Romania are respectively negative and zero otherwise.
Standard errors in parentheses.
The marginal effects are from partial interactions in probit models.
For subgroups, these are estimated using third differences.

Table 5.5: Falsification tests: unaffected outcomes

the perception variables to define the treatment groups and keeping our outcome of primary interest as dependent variable. The results are reported in Table 5.6 where each column corresponds to one of the three definitions of treatment and control groups and they show no significance at all. We therefore do not find an impact of the shock in attitudes on settlement intentions when using alternate treated and control groups, which we interpret as further support for our identification strategy.

| | Overall economic conditions (1) | Employment / labour market conditions (2) | Overall political conditions (3) |
|---|---|---|---|
| *dependent variable: settlement intentions at destination* | | | |
| *treatment group: negative perception on Romania (col. 1, 2 and 3)* | | | |
| *control group: stable perception on Romanian conditions* | | | |
| Negative×post | -.033 | -.051 | .022 |
| | (.050) | (.058) | (.045) |
| Negative×post×low. educ. | -.045 | -.008 | .134 |
| | (.161) | (.152) | (.132) |
| Negative×post×med. educ. | .019 | .079 | -.054 |
| | (.128) | (.109) | (.100) |
| Negative×post×high educ. | .038 | -.125 | -.026 |
| | (.169) | (.132) | (.128) |
| Negative×post×language | .002 | .059 | -.038 |
| (fluent in Italian) | (.130) | (.119) | (.102) |
| Negative×post×recent mig. | -.025 | -.099 | -.047 |
| (in Italy less than 3 years) | (.118) | (.108) | (.094) |
| Negative×post×over 40 | -.030 | .031 | .003 |
| (older than 40) | (.171) | (.163) | (.147) |

Notes: The dependent variable is settlement intentions in Italy (same as in tables 2-4).
Standard errors in parentheses.
The marginal effects are from partial interactions in probit models.
For subgroups, these are estimated using third differences.

Table 5.6: Falsification tests: unaffected groups

The results from Tables 5.5 and 5.6 are consistent with the absence of bias in our estimation. They support our hypothesis that changes in native attitudes have a significant impact on settlement intentions in the destination country and this is not driven by omitted characteristics.

Finally, we investigate whether our results are affected by different pre-trends. Our identification strategy relies on the assumption that individuals in our treatment and control group follow the same time trend behaviour in settlement intentions. In other words, trends in settlement intentions are assumed to be the same for Mediaset

and non-Mediaset watchers in the absence of the "Tor di Quinto" events. Evidence in support of the parallel trends assumption comes from our additional results in Table 5 in which we use retrospective information on perceptions of the situation in Romania. If our treatment and control group would have been characterized by different time trends in settlement intentions, it would be very likely that the two groups also have different time trends with respect to related outcomes. We therefore would expect to find significant differences between the two groups when looking at outcomes related to settlement intentions that are likely to be unaffected by the "Tor di Quinto" events. However, we do not find any significant differences in long run trends between the two groups when looking at changes in perceptions on the evolution of economic conditions, the labour market situation and the political context in Romania. This speaks in favour of our assumption that trends in settlement intentions did not differ.

To provide more support for our parallel trends assumption, we combine our DiD estimation with propensity score matching (e.g. Blundell and Dias 2009) and apply the method suggested by Villa (2011). We do this first without covariates replicating the method for Table 5.2, but using weights based on the propensity score. The corresponding results, reported in the appendix in Table C5, are very similar to the estimates in Table 5.2. We do then the same exercise but conditioning on observable characteristics, i.e. replicating Table 5.3, and obtain the estimates provided in Table C6 in the appendix. The results are very similar to those reported in the last column of Table 5.3. This is further evidence that the differences in observable characteristics do not cause bias and do not affect the credibility of our parallel trends assumption.

## 5.6 Conclusions

The out-migration rate of foreign born after five years of residency varies greatly across the main destinations countries: e.g. it was on average 20 percent in the US, 40 percent in the UK, and 60 percent in Ireland (Dumont and Spielvogel 2008). The self-selection of return migrants leads to important compositional changes in the cohorts of foreign born who remain at destination. These changes are crucial for understanding both the economic assimilation of immigrants in the host societies and the impact of return migration for the source countries. Lubotsky (2007) shows that not accounting for selective return migration leads to overestimating the rate of economic assimilation during the first decade spent in the host country. There is to date no conclusive evidence about what determines the selection into return migration. After the 2008 economic crisis, several major destination countries saw a surge in support for nationalist and populist parties. This led mainstream politicians to adopt harsh anti-immigration positions. In this context, negative attitudes towards migration can greatly influence choices over return migration. However, the effects

of native attitudes on out-migration decisions has not been studied extensively in the empirical economics literature.

One novelty of our study lies in uncovering a significant relationship between changes in public attitudes and migrants' settlement intentions. We exploit the variation in media consumption among Romanian migrants in Italy and use data after a unique shock in the attitudes of Italians towards Romanian migrants. Our results indicate that Romanian migrants who have been affected by the sharply hardened native attitudes are less likely to plan to settle in Italy. We find a reduction in settlement intentions on average by more than 10 percent that can be attributed to the change in natives' attitudes.

Two types of potential implications derive from our findings: short-run effects on immigrants' current choices and long-run effects on their socio-cultural integration in the host country. Due to the nature of our data, we identified in the paper the current (short-term) impact of native attitudes on return intentions. This effect might fade away so that migrants not only settle at destination but also change their return intentions over the migration biography. But our result remains socially and economically relevant. Many of the choices made by migrants (like e.g. remittances, investment in language acquisition, degree of interaction with natives) depend to a larger extent on current, short-term plans than on future realizations of return intentions (see e.g. Dustmann and Mestres 2010). The link we identify between native attitudes and return intentions becomes even more important if native attitudes continuously deteriorate, like they did in most European receiving countries in the period after the events we study. Recent Eurobarometer surveys show that immigration has become by far the single most important concern of EU citizens (European Commission 2015). In this context, current (short-term) return intentions can persist and even without being realized can impede immigrants' integration, e.g. by diminishing their direct interactions with natives (Danzer and Yaman 2013). Besides, looking at official Italian immigration data (Istat 2014) we find some tentative evidence that the 2007 events might have impacted on the actual outmigration flows of Romanian citizens from Italy. The absolute number of Romanians leaving Italy in 2008 more than doubled compared to the previous year (2007). No other immigrant community in Italy experienced an increase in outflows of a similar magnitude for this period. Moreover, the number of Romanians leaving Italy continued to increase in subsequent years, although the inflows from Romania decreased steadily.

The impact we identify on return and settlement intentions is not coincidental. And less skilled migrants are more affected by the shock in attitudes than medium and highly skilled migrants. The implications for destinations countries of immigrants are straightforward if we believe that the effect of native attitudes on settlement intentions is not purely temporary in nature. Negative attitudes affect migrants who

have the lowest skills and therefore lowest earnings in a particular cohort. They will face reduced incentives to invest in country specific skills or language. If they do return, any predictions on the economic assimilation of immigrants will have to be adjusted downwards to account for the negative selection into return migration. If they stay in the host country, persistent return intentions will hamper their socio-economic integration. The implications for the sending countries are manifold. The recent tide in anti-immigrant feelings may induce more return migrants from the lower end of the skill distribution in any immigrant cohort. This reduces the expected benefits from temporary migration. Changes in intended durations of stay may also affect both the magnitude and the use of remittances sent from abroad. This in turn might reduce the potential growth inducing effects of remittances in sending countries, which are often developing or transition economies..

# Chapter 6

# General conclusions

Over the last two decades almost all CEE countries experienced massive labour outflows and significant flows of return migration. The long-run welfare impacts of these migration flows for the countries of origin are hardly predictable. The evidence overwhelmingly suggests that migrants are positively selected from the population of the sending countries with regard to age, education, productive skills, entrepreneurial spirit, democratic and civic engagement. From the perspective of migrants themselves, migration is an opportunity to improve their standards of living. From the perspective of the sending countries, the emigration of the young and most productive workers is a loss and can be harmful for transition and developing economies. There are two compensation mechanisms for this loss (besides the theoretical possibility of a "brain gain" due to virtuous educational incentives in the native population): remittances and return migration. Remittances are an important channel through which migration impacts on the sending country. After a small decrease during the economic recession, remittances received by CEE countries from their migrants abroad continued to rise steadily (see table 6.1). Our analysis suggests that return migration has also potentially considerable effects for the socio-economic developments of sending countries. While the positive impacts of remittances are less controvesial in the economic literature, we do not yet fully understand if return migration can alleviate the negative supply shock of emigration in the sending countries. For this, we would need to assess the impacts of return migration accross areas such as employment, health, education, inequality and democratisation. The present thesis addressed only a few of these aspects. The next section (6.1) summarises our findings with regard to the labour market impacts of temporary migration in CEE. Section 6.2 presents some key issues on the recent migration from Eastern Europe that remain to be answered by future studies.

| Country | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014e | % of GDP in 2010 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Albania | 1,162 | 1,290 | 1,359 | 1,468 | 1,495 | 1,318 | 1,156 | 1,126 | 1,027 | 804 | 1,031 | 10.9 |
| Bulgaria | 1,726 | 1,613 | 1,716 | 1,694 | 1,919 | 1,592 | 1,333 | 1,483 | 1,449 | 1,667 | 1,653 | 3.3 |
| Croatia | 665 | 693 | 825 | 1,072 | 1,234 | 1,208 | 1,212 | 1,348 | 1,385 | 1,497 | 1,537 | 2.1 |
| Czech Republic | 814 | 1,460 | 1,688 | 1,897 | 2,043 | 2,016 | 2,016 | 2,075 | 2,026 | 2,270 | 3,099 | 1.1 |
| Estonia | 167 | 264 | 402 | 411 | 362 | 306 | 320 | 407 | 401 | 429 | 465 | 1.7 |
| Hungary | 1,722 | 1,913 | 2,073 | 2,309 | 2,509 | 2,137 | 2,144 | 2,278 | 2,144 | 2,268 | 2,371 | 1.5 |
| Latvia | 230 | 381 | 482 | 552 | 601 | 591 | 614 | 695 | 730 | 762 | 839 | 2.6 |
| Lithuania | 325 | 534 | 994 | 1,433 | 1,566 | 1,239 | 1,674 | 1,956 | 1,508 | 2,060 | 2,973 | 3.3 |
| Moldova | 705 | 915 | 1,176 | 1,491 | 1,888 | 1,199 | 1,351 | 1,600 | 1,786 | 1,976 | 1,956 | 23.2 |
| Poland | 4,724 | 6,471 | 8,486 | 10,468 | 10,408 | 8,094 | 7,575 | 7,641 | 6,935 | 6,984 | 7,959 | 1.7 |
| Romania | 132 | 4,708 | 6,673 | 8,461 | 9,285 | 4,881 | 3,879 | 3,889 | 3,674 | 3,515 | 3,633 | 3.3 |
| Russian Federation | 2,499 | 3,437 | 3,820 | 4,666 | 5,737 | 5,105 | 5,250 | 6,103 | 5,788 | 6,751 | 7,326 | 0.3 |
| Serbia | .. | .. | .. | 3,062 | 2,708 | 3,933 | 3,349 | 3,271 | 2,763 | 3,183 | 3,254 | 7.5 |
| Slovak Republic | 529 | 946 | 1,088 | 1,483 | 1,973 | 1,671 | 1,591 | 1,753 | 1,928 | 2,072 | 2,212 | 2.2 |
| Slovenia | 266 | 261 | 279 | 320 | 380 | 329 | 347 | 489 | 644 | 686 | 702 | 1.5 |

Notes: All numbers are in million US dollar.(nominal).
Data from World Bank calculation based on data from IMF Balance of Payments Statistics.

Table 6.1: Migrant remittance inflows in CEE

## 6.1 Main results

Our analysis of the selection of East European migrants and returnees suggests that workers move in accordance with the wage premium they receive at destination (place premium). Decisions to migrate and return are therefore consistent with an optimal strategy to maximise lifetime income. The observed sorting of migrants across destination countries is therefore in line with the predictions of standard economic theory. It is also remarkably concurring with qualitative evidence of both previous sociological studies (which emphasise the role of migrant networks) and political science research (which highlights the importance of selective migration policies).

The rationality of migration and return decisions allows us to assess the long-run implications of temporary migration for sending countries. For the case of Romania, despite the strong positive selection into initial migration, our results imply positive long-run effects due to return migration. The enhanced wage productivity of return migrants increases the average wage level and the level of schooling through remigration and through incentives to invest in education. Our comparative analysis in chapter 2 indicates that these findings are can be generalised for other CEE countries.

The analysis for the case of Romania leads to the conclusion that return migrants are strongly positively selected on observables and negatively selected on unobserved characteristics, relative to non-migrants. Despite the inherent identification problems given that migration and return decision are endogenous to education and labour market outcomes, our data allow some guarded insights into the nature of selection on unobservable characteristics for returnees who worked and those who studied abroad. With all the necessary caution, our findings suggest opposite signs in the selection on unobservables for work abroad and for study abroad. Migrants who work abroad and return appear to have unobserved characteristics which are negatively correlated with their subsequent wage productivity upon return. This means that the omitted variables bias when controlling only for observables is negative and simple OLS estimates will understate the premium for work experience abroad. On the contrary, those who studied abroad and subsequently returned to work in Romania appear to possess unobserved characteristics which are positively correlated with their labour market performance upon return. The omitted variable bias in OLS regressions of wages on foreign education is therefore positive. Without adjusting for selection on unobserved variables we overestimate the payoff to studying abroad. For the case of Romanians educated abroad and working back home, correcting for selection on unobservables renders the payoff to foreign education insignificant. Obtaining accurate estimates of the returns to studying abroad is of obvious importance for understanding the mobility patterns of students (who studies abroad and who returns afterwards?) and the potential long-term impacts of foreign education for the sending countries.

The results of chapter 5 complement these findings by looking at return decisions. We find that the recent tide of anti-immigrant feelings in European destination countries affects migrants' intended duration of stay abroad. The effect is more pronounced at the lower end of the skill distribution in any immigrant cohort. From the perspective of the sending country, a negative selection into return migration reduces the expected benefits from temporary migration. Changes in intended durations of stay may also affect both the magnitude and the use of remittances sent from abroad (Piracha and Randazzo 2011). This in turn diminishes the potential growth inducing effects of remittances in migrants' regions of origin.

## 6.2 Implications and scope for further research

The economic literature has amassed ample evidence, models and empirical methods to study the effects of migration for receiving countries. But there remain still many questions to be answered, in particular about the effects of temporary migration for the sending countries. In this context, it is important to understand the nature of selection into return migration and the out-migration patterns of foreign born. Both are crucial determinants of the long term impacts of migration for sending and receiving countries.

How do migrants self-select from the population of the country of origin? How do returnees in turn self-select from the cohorts of migrants residing abroad? The methods used in this thesis to address such questions rely on a partial equilibrium approach. It assumes that the selection of migrants and returnees is determined by the relative income and skill distributions in the sending and destination countries and that migration flows do not affect these distributions. This last assumption becomes questionable for large migration outflows, like those experienced by some CEE countries. As Borjas (2014, p.213) points out, "we do not yet understand the nature of selection in a general equilibrium context".

A wealth of recent evidence suggests that out-migration played a much more important role during the age of mass migration than was recognised until now (Bandeira et al. 2013, Abramitzky et al. 2013). The estimations carried out by Bandeira et al. (2013) imply rates of return migration from the US of about 60 and 75 per cent for each of the first decades of the 20th century. This is double the magnitude of previously reported out-migration rates. Will the closing of the current East-West migration cycle bring about comparable rates of return migration to CEE countries? A more general aim of future research could therefore be to reconcile the views that mass migration had historically positive effects on countries of origin but these will not necessarily materialise for recent migration flows (see Bandeira et al. 2013).

Economic research can help understanding the impacts of temporary migration

in a broader context. It can contribute to explain the migration-democracy nexus in East European and Central Asian transition economies. Does international migration act as a facilitator of institutional change in countries of origin or is it only an outcome of the dissatisfaction with prevailing political and economic conditions? Recent democratic backlashes in some East European countries confirms the relevance of such questions. Over the last decade, all these countries experienced sharp changes in the pace of their democratic change (as reflected e.g. in their scores on indices of democracy) as well as dramatic increases in emigration rates (reflected e.g. in the ratio of highly skilled leaving the country). Both processes, migration and democratic consolidation, have profound implications for the economic development and the integration of these countries in the global economy.

The interrelationship between migration and institutional change has received little attention in either the economic research on migration or the democratisation literature. Some earlier studies found that westbound migration from Eastern Europe in the 1990s has had minimal or no impact on the democratic consolidation in post-communist countries (Morawska, 2001). Labour outflows appeared as exit strategies which deflate potential protests against the hardships of economic transformation. Migration provided work abroad and a source of income but this in turn was only a negligible facilitator of democratisation. Future comparative economic research can look for alternative explanations. It can reconcile previous studies by tracing their contrasting findings back to differences in the nature of selection of migrants and returnees. As our results suggest, such differences in the type of selection follow the predictions of the human capital model of migration. Even the standard model provides therefore a solid foundation to ask if countries on different paths of institutional change will experience the migration-development relation in divergent ways.

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# Appendix A

# Emigration indices based on administrative data

Using analogous methods to those employed by Becker, Ichino and Peri (2004), we construct two sets of indices: one based on years of schooling, the other on the ratio of university graduates as indicators of the human capital content of emigration flows. Another indices are based on the shares of different professional categories in the total (sedentary) population and among the emigrants.

The first set of indices uses years of schooling as the relevant measure to compare the human capital of emigrants to that of the total populations. Formally, for an aggregate equation like:

$$\ln Y_{nt}^{g} = \beta_{0nt} + \beta_{1nt} h_{nt} + \varepsilon_{n} \tag{A.1}$$

where $\ln Y_{nt}^{g}$ is the log of the geometric mean wage in country $n$ at time $t$, and $h_{nt}$ is the mean level of schooling in $n$ at time $t$, the empirical evidence suggests a proportional relation between log output per capita and education, measured by years of schooling: $Y_t \sim e^{\beta h_t}$. In order to capture the exponential impact of per capita human capital outflows in time period $t$ the appropriate measure is:

$$\psi_t = \frac{e^{\beta h_t^E}}{e^{\beta h_t^P}} = e^{\beta (h_t^E - h_t^P)} \tag{A.2}$$

where $h_t^E$ and $h_t^P$ are the mean years of schooling of emigrants and of the sedentary population:

$$h_t^E = \frac{\sum_j h_{j_t}}{E_t}$$

$$h_t^P = \frac{\sum_i h_{i_t}}{P_t}$$

with $i$ and $j$ indexing individuals who belong at time $t$ respectively to the total ($P_t$) and to the emigrant ($E_t$) population[1].

A second set of indices uses the share of tertiary graduates in the total working-age population and among the emigrants:

$$g_t^P = \frac{G_t^P}{P_t}$$

[1] $\psi_t$ takes thus only positive values. If $\psi_t > 1$ the human capital productivity of the average emigrants is higher than that of the average stayers. In this case, emigration induces a per capita loss of productive human capital. If $\psi_t > 1$ the opposite is true: non-migrants are on average more productive than emigrants.

$$g_t^E = \frac{G_t^E}{E_t}$$

whereby, $G_t^E$ and $G_t^P$ are the total number of tertiary graduates who emigrated in period $t$ and, respectively, stay put. $P_t$ denominates again the resident (sedentary) population and $E_t$ the total number of emigrants over period $t$. The corresponding index[2] is defined as:

$$\gamma_t^E = \frac{g_t^E}{g_t^P}. \tag{A.3}$$

It is also possible to compute an index for comparing the ratios of lower educated persons among the emigrants and in the total working age population:

$$\lambda_t = \frac{l_t^E}{l_t^P} \tag{A.4}$$

with

$$l_t^E = \frac{L_t^E}{E_t}$$

$$l_t^P = \frac{L_t^P}{P_t}$$

being the ratio of low educated (compulsory schooling) emigrants ($l_t^E$) and residents ($l_t^P$)[3].

A third set of indices captures the impact of emigration on the per capita distribution of professional skills. Using a standard classification of occupations (e.g. ISCO) it is possible to distinguish the high skilled professionals in the total population ($S_t^P$) as well as the total number of emigrants in period $t$ belonging to highly skilled professions ($S_t^E$). The corresponding ratios

$$s_t^E = \frac{S_t^E}{E_t}$$

$$s_t^P = \frac{S_t^P}{P_t}$$

are used for computing the index[4]:

$$\sigma_t = \frac{s_t^E}{s_t^P}. \tag{A.5}$$

Similarlly, an index evaluating the emigration rate of workers from professions with relatively low skill requirements:

$$\zeta_t = \frac{z_t^E}{z_t^P} \tag{A.6}$$

[2]Values of $\gamma_t$ above 1 indicate that the ratio of tertiary graduates is higher among emigrants than in the sedentary population. Values below 1 suggest on contrary, that there are fewer graduates among emigrants than among stayers.

[3]$\lambda_t > 1$ signals higher shares of low educated among emigrants than non-migrants. $\lambda_t < 1$ indicates that the share of low educated is smaller in the emigrant than in sedentary population.

[4]$\sigma_t > 1$ implies that the ratio of highly skilled emigrants is larger than the corresponding ratio of residents. $\sigma_t < 1$ suggests on contrary, a lower ratios of highly skilled among emigrants than in the resident population.

where $z_t^E$ and $z_t^P$ are the ratios of untrained workers emigrating or remaining immobile[5]:

$$z_t^E = \frac{Z_t^E}{E_t}$$

and

$$z_t^P = \frac{Z_t^P}{P_t}.$$

For these human capital indices we use data provided by the Romanian National Institute for Statistics and Economic Studies, henceforth INS data. The source of these data are administrative registers and border crossing records, maintained by the Romanian Ministry of Internal Affairs[6]. These generate records on the individual characteristics of emigrants. The data include all those emigrants who leave Romania on a permanent or long-term basis, i.e. the persons who officially give up their residence status in Romania in order to become long-term residents or citizens of other countries. Because of unharmonised systems of reporting, all the data before 1995 were considered to be unreliable, so that the period covered by the constructed data set is 1995-2001. Table A.1 provides an overview of the constructed data set and the included variables. For each individual information on his socio-demographic characteristics - like age, gender, ethnicity, education, profession, region of origin in Romania (NUTS 3) - were reported together with the intended country of destination.

Despite their shortcomings, there are two arguments why the INS data might still be appropriate for gaining some quantifiable indicators of the Romanian brain drain. First, permanent emigrants are the most relevant subjects for a brain-drain analysis: the probability that their departure represents a permanent loss of human capital for the country of origin is much higher than for all other types of emigration - which are more likely to include return or circular migrations. Second, comparing the figures obtained with INS data with estimates from other studies shows that the former replicate rather well the generally observed trends of emigration from Romania. The INS data reveal similar patterns of emigration to those reported in aggregate-level studies - witness therefor are e.g. the SOPEMI country profiles for Romania - as well as in more dis-aggregated surveys: the data resemble e.g. the findings obtained by Diminescu and Lazaroiu (2002) from a large-scale community-level survey[7].There are also some plausible justifications for this resemblance. One would be related to the incentives to officially declare the settlement abroad while the mobility strategy included from the beginning return migration. Given the facilities offered for repatriates, e.g. avoiding customs duties and taxes for repatriated assets, migrants might temporarily give up their Romanian residence just to make use of these benefits when returning. Such patterns have been documented e.g. for returning Turkish guestworkers.

The corresponding data for the indices on occupational skills are extracted from aggregated data of the Romanian labour force survey (LFS-AMIGO). We complement

[5] $\zeta_t$ takes values above 1 when the flows of emigrants include relatively more workers from low skilled professions than in the non-migrant active population.

[6] A systematic overview of Romanian administrative statistics on international migration is provided by the INS:
http://www.unece.org/stats/documents/2001/05/migration/2.add.11.e.pdf.

[7] Both on national and, even more striking, on regional, i.e. county (NUTS3) level the emerging destinations of temporary circular migrants revealed by Diminescu and Lazaroiu (2002) appear to be almost the same with those of permanent emigrants.

| *Variables* | *Categories* | |
|---|---|---|
| Country of destination | EU-15: each of the EU-member countries<br>CEE: Hungary, Bulgraria, Poland, Czech Republic<br>Overseas: US, Canada, Australia<br>Israel, Others | |
| Educational Attainment | University Vocational<br>Secondary Low, compulsory | |
| Occupations | Engineers, Architects<br>Medical doctors, pharmacists<br>Professors, Teaching<br>Economists | Artists, Musicians<br>Techinicians, Foreman<br>Other services<br>Unskilled workers |
| Age | 25-55 years | |
| Gender | Male Female | |
| Ethnicity | Romanian Hungarian<br>German Other | |
| Region of origin | NUTS-3 | |

Table A.1: Constructed administrative data set on Romanian migrants

these data with the distribution of occupational categories (ISCO-equivalent) in the Romanian population, based on micro data from Luxembourg Income Study from the Romanian Integrated Household Survey (henceforth LIS-RIHS data).

We estimate the indices for each country, overall and for aggregated destinations: the EU, including the emigrants settling to the 15 EU member countries and, Overseas, including emigrants who settle to either US, Canada or Australia.

**Results for indices on years of schooling**

The first set of indices refers to the human capital of Romanian emigrants relative to the resident population. $\psi$ captures the productivity impact of the per capita human capital outflows. The average years of schooling in the resident population ($h_t^P$) are the years of schooling indicators from the Barro-Lee data set and the corresponding value from the LIS-RIHS data. The results were interpolated in order to cover all the years 1995-2001. Table A.2 reports $h_t^E$ and $h_t^P$ as well as their difference, $\Delta_t^h$.

To estimate $\psi$ using (A.2), we get the coefficient $\beta$ by averaging the results of several regressions using the two available waves of the LIS-RIHS. For all possible specifications of earnings functions estimated with the 1995 and 1997 data of the RIHS the results show that $\beta \in (0.03, 0.08)$. Consequently, the value of $\beta$ for (A.2) is approximated to be $\beta = 0.055$.

For this value of $\beta$ the corresponding indices $\psi$ for the total emigration flows are reported in Table A.2. Table A.3 helps to answer the question whether the differential of the mean years of schooling between emigrants and the total population changed with the intended destination and over time. The answer is that it clearly did, both over time and along different destinations. Table A.2 shows that, for the period under investigation (1995-2001) the average education of emigrants grew with almost one year of schooling over the average of the total population. Table A.3 in turn reveals that these differentials were strongly varying over destinations. The average emigrants targeting one EU country had received about 1.5 less years of

schooling than the average Overseas emigrants. For the EU itself, the pattern is also highly diverse: the UK, followed by France in recent years, appears to have attracted significantly higher educated emigrants than e.g. Germany or Austria. At the bottom part, the educational attainment of emigrants leaving to Italy and Spain sharply declined in the late 1990s. In productivity terms, these trends are reproduced in Table A.4, in which the values of the index $\psi$ are calculated for the main destinations.The value of $\psi$ is higher than 1 for each of the destinations and for all years observed. This is an indication that, over the whole period, Romanian emigrants were on average better educated than the sedentary population and thus, that the outflows induced a loss of per-capita human capital in Romania.

**Indices on Outflows of Graduates**

The index $\gamma$ gives the ratio between the shares of tertiary graduates in the emigrant and in the sedentary population. Analogously, $\lambda$ gives the quotient between the shares of lower educated persons - counted as those who leave school after achieving the compulsory level of education - among emigrants and among the total population. $\gamma$ and $\lambda$ use the INS data for emigrants and Barro-Lee estimates for the total population. We extrapolate the trend of the Barro-Lee estimates, adjusted to the values obtained from RIHS: the observed ratio of tertiary graduates in the RIHS sample is averaged with the ratio from the Barro-Lee data and then used for estimating the values of $\gamma$ and $\lambda$ for the missing years. Table A.5 and Table A.6 show the variation of respectively $\gamma$ and $\lambda$ across selected destinations.

The most striking feature of the time trends for $\gamma$ remains however the large difference between the Overseas destinations and those belonging to the EU. The bulk of highly educated emigrants is clearly attracted by the US, Canada and Australia who encourage their immigration rather than by EU-countries, most of whom designed comparatively more restrictive immigration policies towards the highly skills. Whereas the trend for the Overseas destinations is constantly growing, the averaged $\gamma$ for the EU-countries is slowly declining at a conspicuously lower level.

To compute the indices $\sigma$ and $\zeta$ like in equations (A.5) and (A.6), we use information on the occupations of emigrants extracted from the INS data. These include equivalent occupational categories to that of the International Standard Classification of Occupations (ISCO-88). We matched the data on the occupations of emigrants to data on the occupational skills of the total population. For years which were not covered by the RIHS, we used aggregate data from the Romanian Labour Force Survey (LFS - AMIGO).

The index $\sigma$ relates the ratio of highly skilled (ISCO-88 categories 1, 2 and 3, i.e. managers and senior officials, professional and, technicians and associate professionals) among the permanent emigrants to the ratio of highly skilled in the total population. Analogously, $\zeta$ measures the quotient between the shares of low skilled emigrants (ISCO-88 categories 8 and 9, i.e. plant and machine operators and, elementary occupations) and the equivalent share of low skilled among the resident population.

Table A.7 presents the shares of highly and of lower skilled for both the emigrant and the total population as well as the corresponding values of $\sigma$ and $\zeta$ for the investigated years. Table A.8 and Table A.9 decompose then the $\sigma$ and $\zeta$ values, respectively, by the main destinations. The differences between destinations appear to be more pronounced in the case of $\sigma$ and $\zeta$ than for the other indices. The

| Year | $h_t^E$ | $h_t^P$ | $\Delta_t^h = h_t^E - h_t^P$ | $\psi_t$ |
|---|---|---|---|---|
| 1995 | 11.0321 | 9.375 | 1.6571 | 1.0954 |
| 1996 | 11.0800 | 9.402 | 1.6780 | 1.0966 |
| 1997 | 11.1529 | 9.429 | 1.7239 | 1.0994 |
| 1998 | 11.3665 | 9.456 | 1.9105 | 1.1108 |
| 1999 | 11.2936 | 9.483 | 1.8106 | 1.1047 |
| 2000 | 11.9165 | 9.510 | 2.4065 | 1.1415 |
| 2001 | 12.1050 | 9.537 | 2.5680 | 1.1517 |

Source: own calculation; INS, Barro-Lee and LIS-RIHS data

Table A.2: "Brain drain" indices based on years of schooling

| Year | $\Delta_{eu}^h$ | $\Delta_{ger}^h$ | $\Delta_{ita}^h$ | $\Delta_{spa}^h$ | $\Delta_{fra}^h$ | $\Delta_{aus}^h$ | $\Delta_{uk}^h$ | $\Delta_{overseas}^h$ |
|---|---|---|---|---|---|---|---|---|
| 1995 | 1.4036 | 0.9647 | 2.4954 | 2.7805 | 2.1311 | 0.9449 | 3.7547 | 2.8190 |
| 1996 | 1.2858 | 0.8357 | 2.2310 | 1.3899 | 1.2826 | 0.8061 | 3.4371 | 2.7785 |
| 1997 | 1.3135 | 1.0269 | 1.9712 | 1.1832 | 2.0152 | 0.8571 | 2.4610 | 2.8570 |
| 1998 | 1.5401 | 1.1573 | 1.9006 | 1.8773 | 2.4894 | 0.8451 | 2.4282 | 2.7532 |
| 1999 | 1.3451 | 0.9789 | 1.4592 | 0.0836 | 2.2632 | 0.6523 | 2.7312 | 2.7645 |
| 2000 | 1.9353 | 1.4890 | 2.0794 | 0.9545 | 2.9164 | 1.3855 | 3.6900 | 3.3173 |
| 2001 | 1.8799 | 1.6644 | 1.8847 | 0.8486 | 2.4167 | 1.9017 | 3.5275 | 3.3408 |

Source: own calculation; INS, Barro-Lee and LIS-RIHS data

Table A.3: Indices on years-of-schooling-differentials, by destinations

difference between overseas and European destinations appear even more stringent when looking at the values of the index $\zeta$. The values of $\zeta$ for emigration flows towards overseas destinations are relatively small and clearly declining to values bellow 1, i.e., for this countries, the ratio of low skilled is smaller among the emigrants than in the total sedentary population. For the EU-average emigrants, $\zeta$ is also declining but comparatively with a lower slope and almost twice as high values than those for overseas emigrants. Germany displays high values of both the $\sigma$ and $\zeta$ index over the whole period. This pattern is also confirmed by the German administrative data: compared to the German population, immigrants from Eastern Europe in general appear to have a much flatter distribution of skills than their native counterparts, i.e. more unskilled and at the same time relatively more highly skilled workers.

| Year | $\psi_{eu}$ | $\psi_{ger}$ | $\psi_{ita}$ | $\psi_{spa}$ | $\psi_{fra}$ | $\psi_{aus}$ | $\psi_{uk}$ | $\psi_{overseas}$ |
|---|---|---|---|---|---|---|---|---|
| 1995 | 1.0802 | 1.0544 | 1.1471 | 1.1652 | 1.1243 | 1.0533 | 1.2293 | 1.1677 |
| 1996 | 1.0732 | 1.0470 | 1.1305 | 1.0794 | 1.0730 | 1.0453 | 1.2080 | 1.1651 |
| 1997 | 1.0749 | 1.0581 | 1.1145 | 1.0672 | 1.1172 | 1.0482 | 1.1449 | 1.1701 |
| 1998 | 1.0884 | 1.0657 | 1.1101 | 1.1087 | 1.1467 | 1.0475 | 1.1428 | 1.1634 |
| 1999 | 1.0767 | 1.0553 | 1.0835 | 1.0046 | 1.1325 | 1.0365 | 1.1620 | 1.1642 |
| 2000 | 1.1123 | 1.0853 | 1.1211 | 1.0539 | 1.1739 | 1.0791 | 1.2250 | 1.2001 |
| 2001 | 1.1089 | 1.0958 | 1.1092 | 1.0477 | 1.1421 | 1.1102 | 1.2141 | 1.2017 |

Source: own calculation; INS, Barro-Lee and LIS-RIHS data

Table A.4: Indices of "brain drain" based on years of schooling, by destinations

| Year | $g_t^E$ | $g_t^P$ | $\gamma_t$ | $l_t^E$ | $l_t^P$ | $\lambda_t$ |
|---|---|---|---|---|---|---|
| 1995 | 0.1642 | 0.079 | 2.0795 | 0.2378 | 0.242 | 0.9828 |
| 1996 | 0.1757 | 0.081 | 2.1702 | 0.2439 | 0.238 | 1.0249 |
| 1997 | 0.1753 | 0.083 | 2.1124 | 0.2295 | 0.234 | 1.0192 |
| 1998 | 0.1661 | 0.085 | 1.9542 | 0.1805 | 0.230 | 0.7852 |
| 1999 | 0.1945 | 0.087 | 2.2360 | 0.2100 | 0.226 | 0.9292 |
| 2000 | 0.2293 | 0.089 | 2.5772 | 0.1619 | 0.222 | 0.7294 |
| 2001 | 0.2709 | 0.091 | 2.9773 | 0.1507 | 0.218 | 0.6917 |

Source: own calculation; INS, Barro-Lee and LIS-RIHS data

Table A.5: "Brain drain" indices based on educational attainment

| Year | $\lambda_{eu}$ | $\lambda_{ger}$ | $\lambda_{ita}$ | $\lambda_{spa}$ | $\lambda_{fra}$ | $\lambda_{aus}$ | $\lambda_{uk}$ | $\lambda_{overseas}$ |
|---|---|---|---|---|---|---|---|---|
| 1995 | 1.0317 | 1.2864 | 0.4744 | 0.3023 | 0.8390 | 1.0748 | 0.3537 | 0.7109 |
| 1996 | 1.1436 | 1.3643 | 0.6174 | 0.9609 | 1.2098 | 1.2214 | 0.3216 | 0.6960 |
| 1997 | 1.1012 | 1.2989 | 0.6538 | 0.8925 | 0.8524 | 1.2509 | 0.9017 | 0.6522 |
| 1998 | 0.7804 | 1.0136 | 0.5651 | 0.5401 | 0.6732 | 0.5867 | 0.6664 | 0.6722 |
| 1999 | 0.9878 | 1.2807 | 0.8474 | 0.6110 | 0.7883 | 0.8698 | 0.7259 | 0.7296 |
| 2000 | 0.7805 | 1.2419 | 0.5930 | 0.3295 | 0.4510 | 1.2178 | 0.3556 | 0.5362 |
| 2001 | 0.7340 | 1.1333 | 0.6359 | 0.5733 | 0.4953 | 1.0712 | 0.3719 | 0.5788 |

Source: own calculation; INS, Barro-Lee and LIS-RIHS data

Table A.6: Emigration indices, low educational attainment by destinations

| Year | $s_t^E$ | $s_t^P$ | $\sigma_t$ | $z_t^E$ | $z_t^P$ | $\zeta_t$ |
|---|---|---|---|---|---|---|
| 1995 | 0.1806 | 0.0829 | 2.1795 | 0.3673 | 0.1539 | 2.3867 |
| 1996 | 0.1931 | 0.0831 | 2.3238 | 0.3720 | 0.1535 | 2.4235 |
| 1997 | 0.1921 | 0.0833 | 2.3070 | 0.3777 | 0.1530 | 2.4688 |
| 1998 | 0.1820 | 0.0835 | 2.1806 | 0.2894 | 0.1525 | 1.8977 |
| 1999 | 0.2035 | 0.0837 | 2.4314 | 0.2611 | 0.1520 | 1.7181 |
| 2000 | 0.2413 | 0.0839 | 2.8769 | 0.2874 | 0.1515 | 1.8974 |
| 2001 | 0.2752 | 0.0841 | 3.2731 | 0.2676 | 0.1510 | 1.7722 |

Source: own calculation; INS, LFS-AMIGO and LIS-RIHS data

Table A.7: "Brain drain" indices based on occupational skills

| Year | $\sigma_{eu}$ | $\sigma_{ger}$ | $\sigma_{ita}$ | $\sigma_{spa}$ | $\sigma_{fra}$ | $\sigma_{aus}$ | $\sigma_{uk}$ | $\sigma_{overseas}$ |
|---|---|---|---|---|---|---|---|---|
| 1995 | 1.6665 | 1.4914 | 1.3024 | 1.2651 | 2.8017 | 0.9380 | 5.2099 | 4.3245 |
| 1996 | 1.6294 | 1.4365 | 1.1666 | 1.4030 | 1.8207 | 0.9469 | 3.8001 | 3.9782 |
| 1997 | 1.5619 | 1.5670 | 0.9781 | 1.0637 | 2.6887 | 0.9365 | 3.1939 | 4.0290 |
| 1998 | 1.3345 | 1.3422 | 0.7337 | 0.8926 | 2.7604 | 0.5981 | 2.5350 | 3.7438 |
| 1999 | 1.5060 | 1.5879 | 0.8358 | 0.0568 | 2.7637 | 0.8935 | 3.6402 | 4.0932 |
| 2000 | 1.6874 | 2.0062 | 0.9904 | 0.1744 | 2.5635 | 1.6333 | 4.5480 | 4.6533 |
| 2001 | 1.3891 | 2.2834 | 0.7601 | 0.1544 | 2.0545 | 2.6344 | 4.4991 | 4.9834 |

Source: own calculation; INS, LFS-AMIGO and LIS-RIHS data

Table A.8: Emigration indices, high occupational skills by destinations

| Year | $\zeta_{eu}$ | $\zeta_{ger}$ | $\zeta_{ita}$ | $\zeta_{spa}$ | $\zeta_{fra}$ | $\zeta_{aus}$ | $\zeta_{uk}$ | $\zeta_{overseas}$ |
|---|---|---|---|---|---|---|---|---|
| 1995 | 2.5632 | 2.9560 | 1.7406 | 1.1727 | 2.1824 | 2.8834 | 1.3652 | 1.3466 |
| 1996 | 2.7861 | 3.1037 | 2.4509 | 2.8629 | 2.8436 | 2.9689 | 2.1196 | 1.4413 |
| 1997 | 2.9259 | 3.1222 | 3.2181 | 2.2338 | 2.0128 | 3.3332 | 2.3385 | 1.3643 |
| 1998 | 2.1503 | 2.6017 | 2.4035 | 1.9957 | 1.3176 | 1.4564 | 1.7231 | 1.3626 |
| 1999 | 2.0320 | 2.4455 | 2.4177 | 0.9711 | 1.2760 | 1.6728 | 1.0793 | 1.2104 |
| 2000 | 2.4118 | 3.0888 | 2.9151 | 0.7512 | 0.9790 | 2.8847 | 1.4764 | 1.0065 |
| 2001 | 2.4836 | 2.8304 | 3.4360 | 1.2901 | 1.1728 | 2.4586 | 1.1634 | 0.9371 |

Source: own calculation; INS, LFS and LIS-RIHS data

Table A.9: Emigration indices, low occupational skills by destinations

# Appendix B

# Maps: regional distribution of migrants and returnees

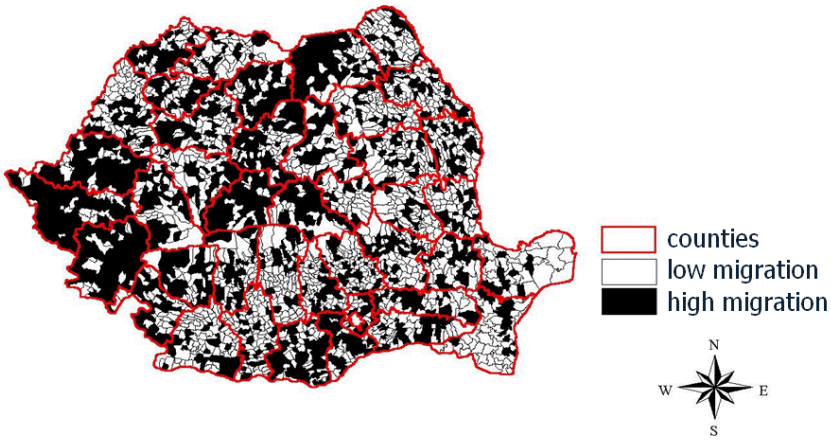


Figure B.1: Emigration rate to Germany, 2002
(Data from Migration Census, Diminescu and Lazaroiu 2002)

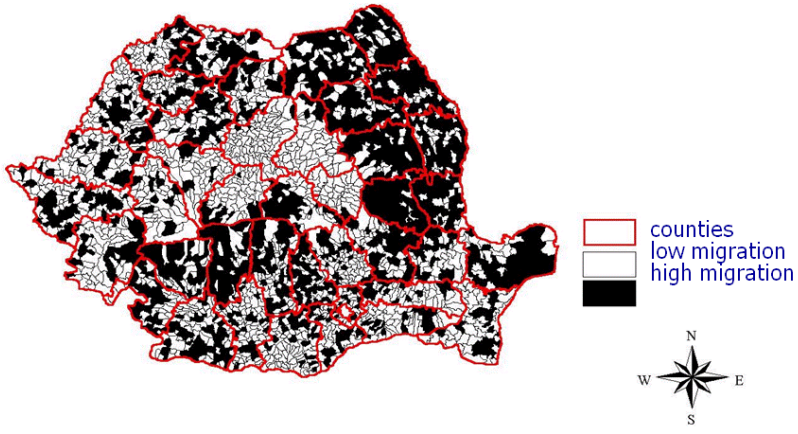


Figure B.2: Emigration rate to Italy, 2002 (Data from Migration Census, Diminescu and Lazaroiu 2002)

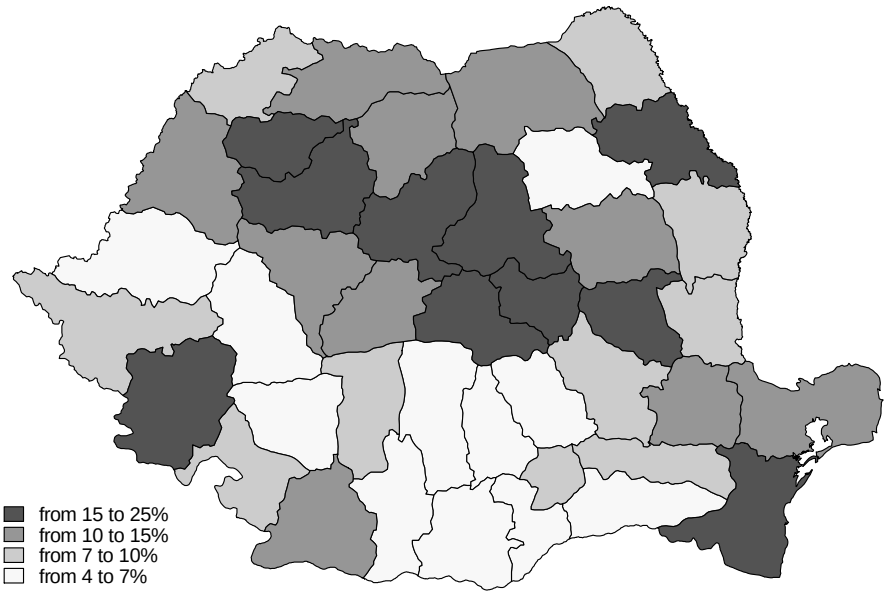


Figure B.3: Rate of return migration at county level, 2003 (NDS data)

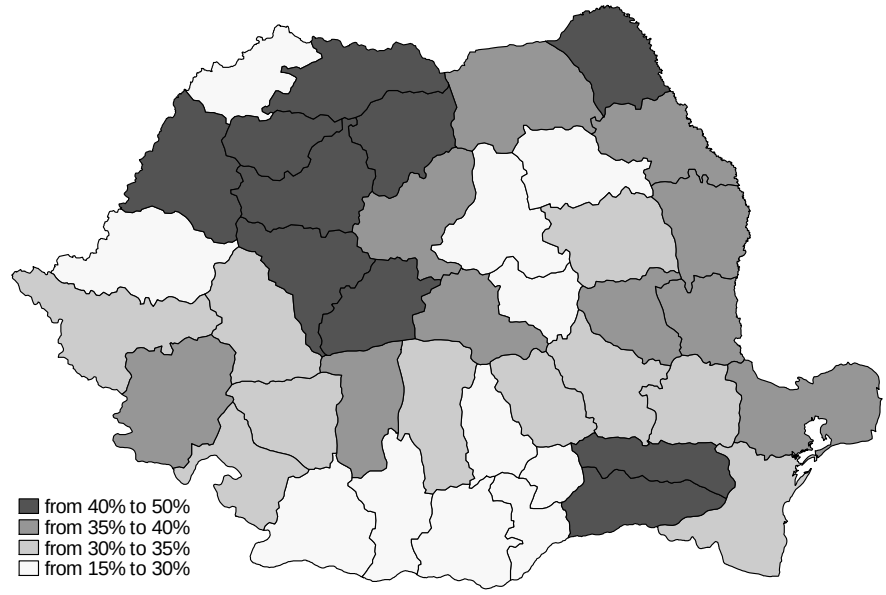


Figure B.4: Average rate of migration intentions, 2003 (NDS data)

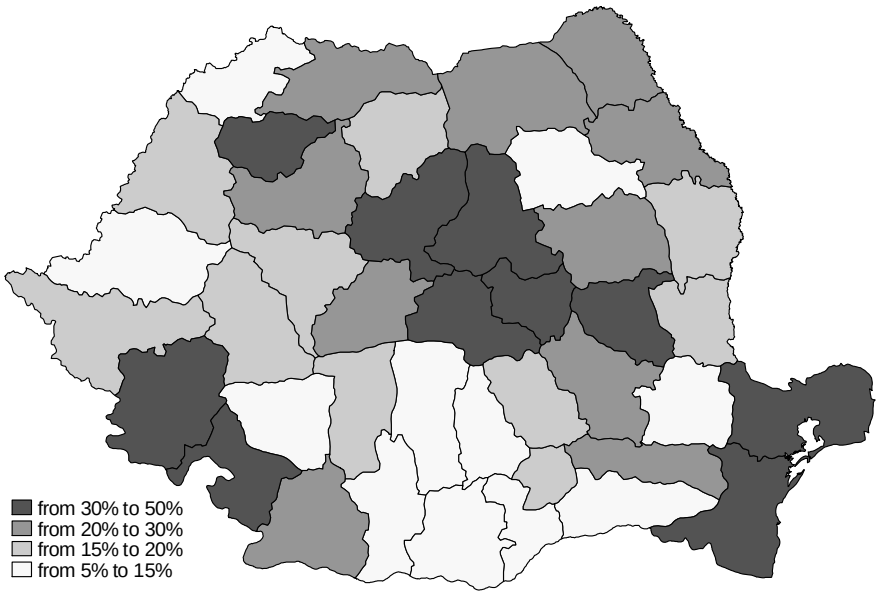


Figure B.5: Rate of seasonal migration (as fraction of returnees) (NDS data)

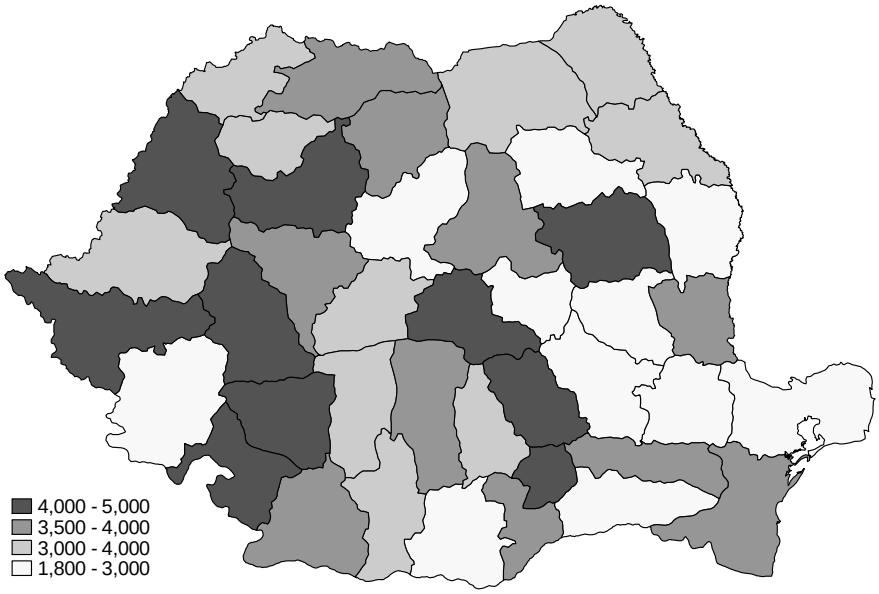


Figure B.6: Average reported wages by county, (in RoL, NDS data)

# Appendix C

# Additional material for chapter 5

## C.1 Description of variables

| Variable | Definition |
|---|---|
| Age | Constructed using the self-reported year of birth |
| Woman | Dummy based on self reported gender |
| Low education | Low level of education |
| Medium education | Medium level of education |
| High education | High level of education |
| Ethnic Roma | Dummy based on self-reported ethnicity |
| Informally employed | Self reported employment status |
| Log wage / month | Log of net monthly wages |
| Hours work / day | Number of hours usually worked per day |
| HH income / month | Net monthly household income |
| Years in Italy | Years spent in Italy since arrival |
| Fluent in Italian | Self reported proficiency in Italian |
| Minority religion | Dummy based on self-reported religious affiliation |
| Overall trust | Answer yes to "Most people can be trusted" |
| Negative Roma | Has negative a attitude towards Roma |
| Don't migrate | Romanians should not come to Italy anymore |
| Worsening opinion | Italian attitudes worsened in recent years |
| Deportation justified | Agrees with proposed deportation after "Tod di Quinto" |
| No Italian contacts | Has no contacts (friendships) with Italians |
| Poor health | Self reported poor health status |
| Tied migrant | Migrated following a family member |
| Migration negative | Negative attitude towards migrating to Italy |
| Roma neighbour | Does not want Roma people as neighbours |
| Annual remittances | Usual amount of remittances send home per year |
| Owns house in Ro. | Owner of a house/flat in Romania |
| Owns land in Ro. | Owner of land in Romania |
| Share for.reign born* | Share of for. born in respondent's region of residence |
| Share Ro. migrants* | Share of Ro. mig. in respondent's region of residence |
| Unempl. rate* | Unemployment rate in respondent's region of residence |

Note: * from official Italian statistics (Istat).

Table C.1: Characteristics of Romanian migrants in Italy

## C.2 Results from fixed and random effects models

For our dependent variable, "settlement intentions in Italy", we have valid observations for 1,063 Romanian migrants included in our sample. Table C2 provides the number of observations for each group and period (based on retrospective answers).

Table C3 describes the variation of our dependent variable ("settlement intentions in Italy"). We use the panel dimension of the data in our DiD method. In addition, Table C4 provides the results of panel models with individual fixed and random effects. The estimated coefficients are very similar to those reported in the DiD analysis.

| | Before "Tor di Quinto" | After "Tor di Quinto" | Total |
|---|---|---|---|
| *Treatment group* | | | |
| Non-Mediaset | 565 | 565 | 1,130 |
| *Control group* | | | |
| Mediaset | 498 | 498 | 996 |
| *Total* | 1,063 | 1,063 | 2,126 |

Table C.2: Number of observations

| *Settlement intentions* | Mean | Std. Dev. | Min | Max | Observations |
|---|---|---|---|---|---|
| overall | .577 | .494 | 0 | 1 | N = 2,126 |
| between | | .453 | 0 | 1 | n = 1,063 |
| within | | .196 | .077 | 1 | T = 2 |

Table C.3: Variation in settlement intentions

The random effects model reported in table C4 includes all covariates from Table 5.3, column 5 in chapter 5.

| | Fixed effects | Random effects |
|---|---|---|
| Post x Non-mediaset | -.0975 | -.0999 |
| | (.002) | (.022) |
| Observations | 2,126 | 2,126 |

*Notes:*The dependent variable is settlement intentions in Italy.
It equals one if migrants plan to stay in Italy on a medium or long term basis with no concrete plans to return in the next twelve months.
Standard errors in parentheses.

Table C.4: Variation in settlement intentions

## C.3 Combined Matching and DiD results (MDiD)

| Media consumption | Before "Tor di Quinto" (1) | After "Tor di Quinto" (2) | Difference (2) −(1) (3) | Diff.-in-differences (4) |
|---|---|---|---|---|
| *Treatment group* | | | | |
| Non-Mediaset | .664 (.021) | .464 (.021) | -.200 (.022) | |
| $[N = 1,130]$ | | | | |
| *Control group* | | | | |
| Mediaset | .645 (.022) | .542 (.059) | -.102 (.041) | -.098 (.042) |
| $[N = 996]$ | | | | |

*Notes:* The table reports results from Kernel-based Propensity Score Matching DiD.
Standard errors in parentheses.
Total observations (N) include valid pre- and post- answers for n=1,063 migrants.

Table C.5: Combined Matching DiD without covariates

| Media consumption | Before "Tor di Quinto" (1) | After "Tor di Quinto" (2) | Difference (2) −(1) (3) | Diff.-in-differences (4) |
|---|---|---|---|---|
| *Treatment group* | | | | |
| Non-Mediaset | .618 (.059) | .416 (.059) | -.202 (.030) | |
| $[N = 1,100]$ | | | | |
| *Control group* | | | | |
| Mediaset | .586 (.059) | .484 (.059) | -.102 (.040) | -.100 (.042) |
| $[N = 982]$ | | | | |

*Notes:* The table reports results from Kernel-based Propensity Score Matching DiD.
Standard errors in parentheses.
Total observations (N) include valid pre- and post- answers for n=1,041 migrants.

Table C.6: Combined Matching DiD with covariates

Table C7 lists those covariates used in our model for which we had statistically significant differences between the treatment and control groups (as reported in Table 5.1). We show the distribution of these variables before and after our matching procedure. After the matching procedure, the means of the pre-treatment variables become very similar for the two groups (the means are exactly the same for the other variables from Table 5.1 not shown here). There are no statistically significant differences between migrants exposed and those not exposed to Mediaset. We obtain the same results using standardised means.

| Variable | | Mean | | t-test | |
|---|---|---|---|---|---|
| | | Control group (Mediaset) | Treated group (No Mediaset) | t-value | p-value |
| Age | Unmatched | 32.060 | 33.281 | -2.210 | 0.028 |
| | Matched | 32.318 | 33.765 | -1.630 | 0.104 |
| Low education | Unmatched | 0.106 | 0.150 | -2.130 | 0.033 |
| | Matched | 0.100 | 0.088 | 0.370 | 0.711 |
| Medium education | Unmatched | 0.791 | 0.673 | 4.370 | 0.000 |
| | Matched | 0.818 | 0.847 | -0.720 | 0.469 |
| High education | Unmatched | 0.102 | 0.177 | -3.490 | 0.000 |
| | Matched | 0.082 | 0.065 | 0.620 | 0.534 |
| Ethnic Roma | Unmatched | 0.084 | 0.119 | -1.840 | 0.066 |
| | Matched | 0.071 | 0.106 | -1.150 | 0.253 |
| Informally employed | Unmatched | 0.235 | 0.343 | -3.900 | 0.000 |
| | Matched | 0.335 | 0.341 | -0.110 | 0.909 |
| Log wage / month | Unmatched | 6.985 | 6.902 | 2.430 | 0.015 |
| | Matched | 6.947 | 6.895 | 1.170 | 0.244 |
| Year in Italy | Unmatched | 4.547 | 3.809 | 3.640 | 0.000 |
| | Matched | 3.347 | 3.218 | 0.710 | 0.480 |
| Fluent in Italian | Unmatched | 0.755 | 0.699 | 2.040 | 0.042 |
| | Matched | 0.688 | 0.618 | 1.370 | 0.173 |
| | Matched | 27.611 | 27.590 | 0.020 | 0.984 |

*(continued)*

| Variable | | Mean | | t-test | |
|---|---|---|---|---|---|
| | | Control group (Mediaset) | Treated group (No Mediaset) | t-value | p-value |
| Negative to Roma | Unmatched | 0.759 | 0.687 | 2.630 | 0.009 |
| | Matched | 0.747 | 0.753 | -0.120 | 0.901 |
| Poor health | Unmatched | 0.139 | 0.177 | -1.710 | 0.087 |
| | Matched | 0.147 | 0.112 | 0.970 | 0.334 |
| Owns land in Ro. | Unmatched | 0.269 | 0.320 | -1.830 | 0.068 |
| | Matched | 0.294 | 0.259 | 0.730 | 0.468 |
| Share foreign born | Unmatched | 6.577 | 6.409 | 2.230 | 0.026 |
| | Matched | 6.529 | 6.487 | 0.380 | 0.705 |
| Share Ro. migrants | Unmatched | 25.798 | 24.049 | 2.790 | 0.005 |
| | Matched | 27.611 | 27.590 | 0.020 | 0.984 |
| Unemployment rate | Unmatched | 4.365 | 4.769 | -3.500 | 0.000 |
| | Matched | 4.636 | 4.740 | -0.660 | 0.508 |

Table C.4: Quality of matching